MASTER THESIS

THE INTEGRATED IMPLEMENTATION OF ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENTAL MANAGEMENT SYSTEM ON THE POWER PLANT SECTOR IN INDONESIA

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ABSTRACT

In order to balance economic development and the pressure on the environment, there have been several regulatory and voluntary instruments that businesses can use for such purposes. In a large number of countries, the Environmental Impact Assessment uses a command-and-control approach, while Environmental Management System uses a voluntary approach. By integrating these two instruments, more effective and efficient management can be expected. This research aims at classifying the potentials and barriers of the integration process of the two instruments in the power plant sector in Indonesia. Taking the power plant sector as a showcase in Indonesia is based on its vital position in the Indonesian economy. In addition, the contribution of this particular sector can be accountable for the 7th Sustainable Development Goal (affordable and clean energy). With the purpose to answer the research question, *How to integrate the potentials of the EIA and EMS schemes to boost their expected individual benefits?* The research approach combined desk research to find the suitable integration concept for the power plants and semi-structured interviewed to gain empirical data and information from relevant stakeholders from the government, business, EIA consultants, and EMS certification body. This study found that EIA-EMS integration's power plant sector concept is slightly different from other literature concepts. For instance, there is a sequencing used of EIA's document for EMS preparation and operation. A sharing of information was also found internally in the power plant. However, It was not shared with another power plant during the planning process. Barriers to the integration were also identified, such as the commitment level of stakeholders, in-situ capacity, and legal aspects. Lastly, the perception of the power plant stakeholders was mostly positive in relation to EIA-EMS integration. Power plant stakeholders have created some room for integration of the two instruments. Nevertheless, as expected, EIA is still the main environmental instrument applied in the sector.

Keywords: Environmental Impact Assessment; Environmental Management System; Power Plants; EIA-EMS Integration

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List of Abbreviation

Proper : Corporate Performance Rating Assessment Program in Environmental Management is a Ministry of Environmental and Forestry program in Indonesia.

UIP JBT : PT PLN Unit Induk Pembangunan Jawa Bagian Tengah: PLN - Parent Unit of Development of Central Part Java I.

PLTDG Bali : Diesel and Gas Turbine Power Plant Pesanggaran Bali (PT Indonesia Power)

PLTA Cisokan : Cisokan Pumped Storage Hydropower Power Plant

RKL-RPL : Environmental Management Plan and Environmental Monitoring Plan

Chapter 1. Introduction

This chapter provides an overview of the background and problem statement of the research. Then, it is followed by the research objective and the organization of the master thesis.

1.1 Background

The Environmental Impact Assessment (EIA) and Environmental Management System (EMS) are two instruments with a similar goal in protecting the environment but have different roots in history, legal standing, and implementation. As an environmental policy, The Environmental Impact Assessment (EIA) has been introduced in 1969 in the National Environmental Policy Act in the United States (Morgan, 2012), while the EMS was introduced in the early 1990s by the British Standard Institution (BSI) Groups (ASQ, 2015). Whilst EIA is implemented mainly by a governmental body of a country through legal force, and EMS is mostly implemented voluntarily. In table 1, the main characteristics used to compare the two instruments are enlisted.

Since their introduction, they have had their own popularity. On the one hand, Fischer (2020) recorded that there are about 193 countries all over the world implementing EIA. How its implementation in a country and how its policies, legislations, and institutions may differ is something to analyze. In general terms, its implementation depends on the legal and political national conditions (Mubanga & Kwarteng, 2020). However, certain essential elements should be very similar because they must be included in the EIA operational procedure, such as screening, scoping, alternatives, EIA Study, submission of Environmental Impact Statement (EIS), approval, and EIA follow-up (Eccleston, 2013; Swangjang, 2018).

Table 1: Characteristics of EIA and EMS (Author's compilation)

Characteristic	EIA	EMS
1	Mostly mandatory/government involvement	Mostly voluntary/private undertaking
2	Mostly in the planning stage	Mostly during operation
3	Mostly conditional to licensing	Sometimes with private certification

The acceptance of the EIA by many countries around the globe shows that the EIA is the most influential policy instrument in the environmental protection sector (Cashmore, Gwilliam, Morgan, Cobb, & Bond, 2004; C. L. Chen, 2014). The acceptance aligns with Caldwell (1982), who argues that the EIA was an innovation in environmental management. It can be explained because the EIA is a structured way to identify the impacts. Through EIA, it is also possible to relate resource management consequences for the environment, which might bring alternatives in the decision-making process. Decisions that simultaneously might increase liability while preparing the EIA reports, involving formal public participation, and promoting planning in monitoring and evaluation (Arts, Fischer, & Jha-Thakur, 2012; Formby, 1990).

On the other hand, EMS certification schemes such as EMAS and ISO 14001 provide a third-party guarantee of environmental "excellence," which is able to gain an advantaged position for their competitors. Indeed EMS certification schemes facilitate self-commitment to improve their environmental performance (Iraldo, Testa, & Frey, 2009). A 2019 survey by the International Organization for Standardization (from now on: ISO) recorded that the number of EMS (ISO 14001) certificates issued worldwide was 312,580, which counted from about 171 countries (ISO, 2020). This number increased from 215,343 in 2017 to 258,566 in 2018. This positive trend shows ISO 14000 is the world's most used environmental management standard (Iema.net, 2017).

1.2. Problem Statement

Even though EIA and the EMS have one aspect in common: the intention to reduce the impact on the environment due to their productive activities, they are applied in different stages of the

industrial projects. On the one hand, use environmental impact assessment in the planning stage, for example, selecting the least destructive alternative locations and the best technical options, and formulating management measures to minimize negative impacts and increase revenue. On the other side, once authority approved the project, the EMS can help ensure sufficient capacity to implement the necessary environmental management and optimize day-to-day operations, thereby further reducing harmful consequences and maximizing benefits. However, in practice, EMS does not build on existing EIA documents; conversely, EIA is not designed to provide helpful input for the EMS (Sánchez & Hacking, 2002). Hence, the question here is how to integrate the potentials of those environmental approaches to bust their expected individual benefits?

In this line of thinking and despite prior efforts to theoretically integrate EIA and EMS, e.g., works published by Marshall (2002) and Perdicoúlis & Durning (2007), studies about its practical integration of EIA and EMS can rarely be found. Hollands & Palframan (2014) studied a successful implementation of EIA-EMS implementation in the UK waste management industry. However, there is no study about it yet in a developing country like Indonesia.

In line with the description above, in this research, I want to focus on the EIA and the EMS's integrated implementation by taking case studies on the power plant sector in Indonesia since there are no scientific articles or theses that focus on this sector yet. In addition, reaching effective and efficient management in the power plant sector is accountable in supporting goal 7, affordable and clean energy, of Sustainable Development Goals (SDG). Connecting the integration of EIA and EMS to SDG is necessary because after SDG was adopted by UN General Assembly in 2015 and became a global agenda, it has reached the attention of governments, business sectors, practitioners, academia from all over the world (Fischer, 2020).

Lastly, by doing this research as a showcase, this might potentially be a valuable input to other business sectors in Indonesia to integrate the EIA and the EMS. Implementing monitoring and evaluation of EIA in Indonesia still has a problem. It is due to the lack of proponent commitment

in applying the Environmental Management Plan (Sitorus, 2020). As the benefit of integrating EIA and EMS, such as making the technical and managerial elements more effective (Gallardo; et al., 2016), it is hoped that other business sectors are also interested in applying and connecting both instruments. Thus, the individual benefits of the EIA and the EMS can be achieved.

1.3. Research Objective

The objective of this research is to study the potential of and barriers in implementing integrated EIA-EMS. It is hoped this research could be a valuable input to policymakers in designing environmental policy and fill the research literature gap. Then, it is hoped this research could inspire them to consider the benefit value of EIA-EMS integration for the business sectors.

1.4 Research Question and Sub-Questions

Regarding the background provided here above, the main research questions that will drive this thesis is:

RQ: *How to integrate the potentials of the EIA and EMS schemes to boost their expected individual benefits?*

To facilitate the process to answer the main question, the following research sub-questions were formulated:

1. What are the integration possibilities of EIA and EMS in the power plant sector?
2. What are the barriers to the integration of EIA with EMS in the power plant sector?
3. What are the power plant stakeholder perceptions on the integrated implementation of EIA and EMS in Indonesia?

1.5. Organization of the Master Thesis

This research project is divided into six chapters. The first chapter introduces the background of the research, the problem statement, and the knowledge and insights that will contribute to solving the problem. The second chapter describes the theoretical framework and preliminary

research, which provides a basis for this research. Then, the third chapter elaborates on the design of this research, including the research framework, research questions, research strategies, data collection methods, data analysis, and research plans. The research findings elaborate in chapter fourth and are discussed in chapter fifth. The last chapter provides conclusions and recommendations.

Chapter 2. Literature and Document Review

In this chapter, the literature review starts by reviewing the concepts and history of EIA and EMS. Then it will be followed by the background on why they should be integrated and conceptual theories that support this scheme. The chapter ends with a discussion of potentials and barriers in implementing the integration of the EIA and EMS in the power plant sector.

2.1 Environmental Impact Assessment (EIA)

The EIA was initiated in 1969 in the United States (Morgan, 2012). At that time, the U.S. National Environmental Policy Act (NEPA) introduced a regulation that an EIA must be undertaken when federal agencies take an action that significantly affects the human environment. In a simple way, EIA can be defined as a systematic process that provides an advance examination of the consequences of an intended development action to the environment (Glasson, Therivel, & Chadwick, 1999). EIA helps decision-makers consider resources of global common concern from politicians, scientists, affected persons, non-state governmental actors, and even the international community during the decision-making process (Craik, 2008).

The EIA was formulated as a decision tool in response to maintain economic growth while overcoming environmental problems (El-Fadl & El-Fadel, 2004). In addition, implementing the EIA in a country may help the proposed developments meet sustainability criteria (Swangjang, 2018) since the EIA is a part of sustainable development, referring to the Rio Summit (1992), Agenda 21 Principle 17. From the perspective of business sectors, the EIA is seen as environmental approval that must be gained before the project starts. Without environmental permission, the project cannot be started. Moreover, starting the project without approval means the act of breaching the law. Therefore, the EIA is must be something that should be prepared (Jones & Mason, 2002).

The primary role of EIA takes place during the planning and design stages of a project. The EIA has three main parts: descriptive information, analytical information, and mitigation

recommendations (Ridgway, 1999). Implementing EIA enables the manager to ex-ante to operations and identify expected environmental effects of a project or policy from a company perspective. By knowing these in advance, the manager may choose mitigation measures. As a result, more sustainable development is possible to achieve (Burgham, Brassat, Ross, & Thompson, 1998). Because by knowing the potential effect from the beginning, it is possible to find alternative technology or method to reduce the impacts.

Some researchers were questioning the expensive cost and long duration process in complying with the EIA regulation. It makes some business companies and projects reluctant to get involved in the EIA process (Morrison-Saunders et al., 2015). However, the benefits of EIA can be divided into two models: the managerial model and the legislative intent model. The organizational model proposed by Morrison-Saunders et al. (2015) has four classifications: operational benefits, corporate benefits; strategic benefits; and organizational benefits. Furthermore, the legislative intent model, proposed by Garner & O'Riordan (1982), related the EIA as the model in abiding by the rules (the EU Directive) which contain consistency and fairness; early-warning; environment and development; and public involvement, which can lead to greater social acceptance.

EIA in Indonesia, known as *Analisis Mengenai Dampak Lingkungan* (AMDAL), is a study about the significant impact of a planned business and/or activity on the environment which is required for the decision-making process regarding the conduct of a business and/or activity (*Law of the Republic of Indonesia Number 32 the Year 2009 Concerning Protection and Management of Environment*). EIA has had a legal basis in Indonesia since 1982. Since then, the EIA regulation has been changed several times, and the last change was in November 2020.

Besides the EIA, another instrument with an essential role in protecting the environment is EMS which will be explored more in section 2.2.

2.2 Environmental Management System (EMS)

EMS can be defined as an evolutionary way for organizations to incorporate environmental protection into their core business and organizational operations by looking into its history. After the 1970s and 1980s, environmental regulations that have to be followed by many corporations are changing rapidly, costly, and complex. These made some corporations decide to implement pollution prevention management voluntarily. This idea leads to a more comprehensive system supported by industry associations, government, and international organizations (Morrow & Rondinelli, 2002).

The Environmental Management System (EMS) is more recent than the EIA. EMS was introduced in the 1990s. At that time, organizations began to adopt its practice on pollution prevention by voluntarily reducing the environmental impact of the manufacturing process, e.g., by reducing (sources of) pollutants. Moreover, the organizations also control the pollutant by implementing a particular technology and management to reduce harmful materials from the emissions. Furthermore, the development of EMS led to some environmental standards such as environmental management (known as ISO 14001 and 14004, environmental auditing (known as ISO 14010, 14011, and 14012), LCA (life cycle analysis known as ISO 14040 and ISO 14021), and environmental labeling (known as ISO 14024) (Ridgway, 1999).

ISO 14001 provides guidelines for an organization/company to continuously improve their environmental performance through a specific systematic framework such as measuring targets and regular review on the attainment (Salim et al., 2018). ISO 14001 has five main components: environmental policy, planning; implementation and operation; checking and corrective action; and management review. Detailed elements of ISO 14001 can be seen in figure 1.

A company/organization that applies ISO 14001 certification can improve corporate sustainable development values slightly better on environmental soundness than a non-ISO 14001 adaptor. It can be seen in Ikram et al. (2019), who concluded ISO 14001 has a positive effect on environmental protection, fairness, and contribution to society. Moreover, Salim et al. (2018) also suggested two sides benefits of ISO 14001 certification, such as cost and energy efficiency for the internal side and a good reputation on environmental stewardship for the outer side. Thus, it makes the company more confident while facing its customers and competitors.

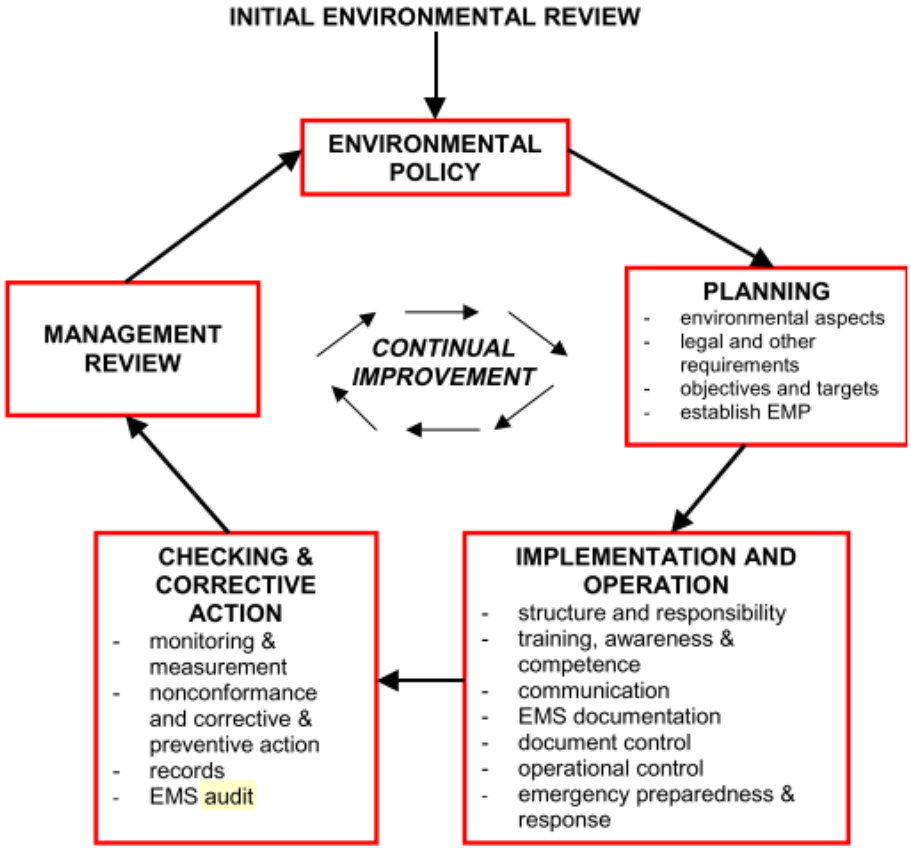

Figure 1 Components of ISO 14001. Source: (Ridgway, 1999)

A company with an ISO 14001 certificate could increase the environmental awareness of managers and workers and classify the ones involved in environmental improvement. Specific programs help realize it, such as employee training programs, improving equipment, and keeping a good record of documentation (Morrow & Rondinelli, 2002).

In practice, it is possible to implement mandatory and voluntary schemes in the same organization. The reasons why they should be integrated are explained in the following section.

2.3 Why is the integration needed?

Several reasons are already recognized why the EIA and EMS need to be linked. For instance, an article from Ridgway (1999) acknowledges that EIA has been relatively successful in identifying the impact of a project. Still, it is not powerful enough to manage the implementation of the necessary action since EIA only sets boundaries for management. Ideally, EIA can be used as a practical management tool that can be used for daily activities. However, it is not what the industry needs in practice because EIA is not focused on management and shortages the framework elements common to recent management systems, such as planning, execution, inspection, and review (Ridgway, 1999). There are three reasons for this: 1. the EIA statements do not use management plans as a basis for the project design; 2. the statements of EIA are sometimes too broad and generic; 3. used to fulfill a particular jurisdiction. In other words, the implementation of EIA is adequately failed to mitigate measures or monitor environmental impacts after the approval of projects (Sánchez & Hacking, 2002).

Even though EIA and EMS can already be considered complementary to each other, they are not actively linked within companies (Hollands & Palframan, 2014). Some articles argue that linking the two instruments would eliminate other weaknesses. For instance, Gallardo et al. (2016) used EMS as the primary tool for EIA follow-up in highway constructions in Brazil. Marshall (2002) used EMS for EIA follow-up in an electrical infrastructure project. Additionally, Gallardo; et al. (2016) found that combining EIA and EMS made the EIA follow-up, technical and managerial elements more effective. Furthermore, Marshall (2002) argued that the combination gives a compact solution for the construction phase and transparency within the organization that will be useful for government authorities.

Moreover, by implementing EMS, it is possible to identify how people and organizations operate in practice because EMS has the potential to create an evaluation framework of the current performance. The potential is the baseline to support the organization in defining where it wants to be in the future. After that, EMS enables the organization to set up an appropriate strategy to reach the future situation by planning, implementing the plan, conducting auditing, reporting, and reviewing the program regularly. The regular review of the project is mostly absent from many other environmental and business processes (Ridgway, 1999). Another benefit in integrating EIA and EMS may be avoiding duplication of actions during the monitoring process and project reporting (Sánchez & Hacking, 2002).

As shown in table 1, Sánchez & Hacking (2002) tried to compare EIA and EMS. They believed that the EMS could help ensure enough capacity in place once the EIA has been approved. The degree of capacity to be expected in place from EMS implementation relates to the quantity and specific skill-sets of human resources, structural organization, and technology availability. More importantly, it can also be used to optimize the daily operation, reduce adverse effects, and maximize benefits.

Table 1 Comparison between EIA and EMS (Sánchez & Hacking, 2002)

The Type of EIA Process	**ISO 14001**
The Planning Stage of the Project	
Screening and scoping	**4.2. Environmental Policy**
	4.3. Planning
Depict the project activities Gained public comments Depict the baseline environment Identify, predict and assess impacts	4.3.1 identify environmental aspects (and impacts
Identify regulation and other requirements	4.3.2. Regulation and other requirements
Develop management plans (mitigation, enhancement, and compensation measures)	4.3.3. environmental objectives and targets. 4.3.4. Environmental Management program(s)
Implementation and management Phase	**4.4. Implementation and operation**
The adjacent EMS items may be conceptually covered in the EIA management plans	4.4.1. structure and responsibility 4.4.2. training, awareness, and competence 4.4.3. Communication 4.4.4. EMS documentation 4.4.5. Document control 4.4.6. Operational control 4.4.7. Emergence preparedness and response

	4.5. Checking and Corrective Action
The adjacent EMS items may be conceptually covered in the EIA management plans	4.5.1 Monitoring and measurement 4.5.2. non-conformance and corrective and preventive action 4.5.3. records 4.5.4. EMS Audit.

The main common aspects of EIA and EMS can be seen in the initial step, which in the preparation, EIA identifies the potential impacts. At the same time, the EMS must take into consideration the actual and potential effects. Furthermore, public scrutiny plays an important role in EIA since the possible criteria are needed to be published. However, in EMS, publishing the impact and how to incorporate it with them are executed internally. Finally, implementing EIA and EMS integration makes it possible to push an organization to have self-responsibility because of their self-commitment to abide by EMS procedures (Wessels, Retief, & Morrison-Saunders, 2015).

2.4 Possibility to combine the EIA & EMS

This section will determine the possibility of integrating EIA-EMS in the Power Plant sector, as mentioned in sub-question 1. The concept is extracted from six different sectors which are: a first from Canadian Government, a second suggested by Ecclestone & Smythe, a third indicated by Sánchez & Hacking, a fourth by Perdicoúlis & Durning, a fifth, a construction approach in mainland China, a sixth and final, environmental improvement approach in an industrial estate by Slinn et al.

The Canadian Government discusses the first concept extracted from literature to integrate EIA and EMS for Natural Resources Canada (NRCan). NRCan is a federal organization responsible for developing the knowledge infrastructure related to Canada's vast landmass and its mineral, energy, and forest resources. To improve the EIA's obligation, NRCan uses the EMS, especially in the audit component. It is hoped by doing this, EMS could also stimulate their initiative to be more sustainable. The article explained that the program succeeded in being an effective and efficient means of establishing an EMS. As a result, there is proved that

the awareness responsibilities improved in internal procedures and management controls (Burgham et al., 1998).

A second concept was proposed by Eccleston & Smythe (2002). This concept links the monitoring process of EIA to EMS Process by translating it into environmental policy, as depicted in figure 1. There is continuous looping after monitoring has been translating to environmental policy. The looping makes sure the monitoring result will be considered in the following environmental policy or new project planning. This concept aims to ensure the predicted adverse impact that will not exceed the levels set out as acceptable in the environmental impact statements. Moreover, the looping process is also expected to increase by continual design improvements, process refinements, and mitigation measures. However, there is no historical, scientific literature that discusses its implementation yet.

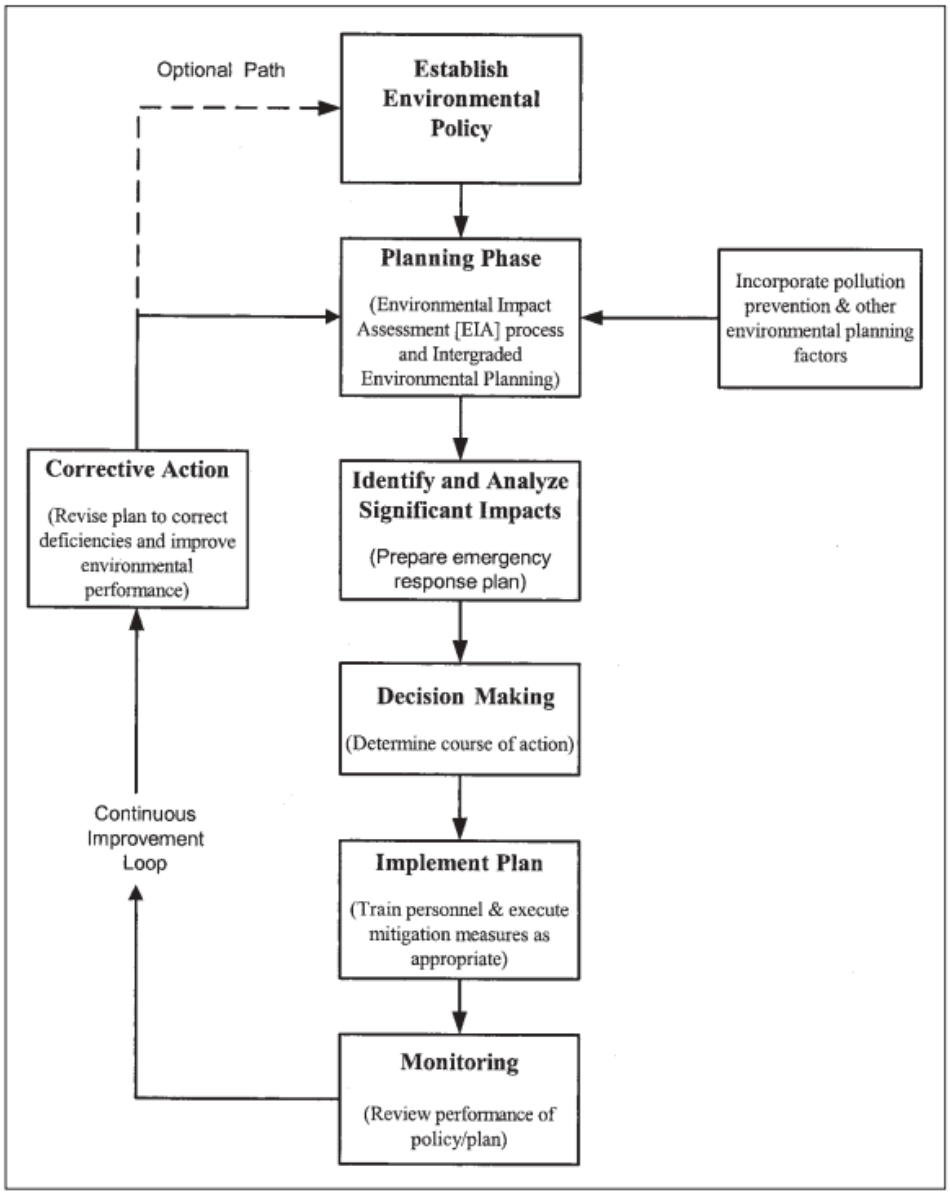

Figure 2 A simple Integrating EIA – EMS by (Eccleston & Smythe, 2002)

A third concept was derived from Sánchez & Hacking (2002), who tried to implement a conceptual framework model in the gold mining sector. The concept is by utilizing an 'EMS friendly' of environmental impact statements in EIA during the EIA preparation. The EMS friendly means the environmental impact statements in EIA are user-friendly. This concept uses the activity-aspect-environmental impact approach that is available in the ISO 14001 standard. This approach, then, is implemented in the six steps of the EIA process: the project activities description, public consultation, the description of environmental baseline, identification of the impact, prediction and assessment, regulation and other requirements,

and management plans. Each of the steps is then linked to the EMS process through a causal mechanism. A causal mechanism in this context refers to an environmental aspect defined in ISO standard as an element of an organization's activities, products, or service that can interact with the environment, such as emission to atmosphere, discharge to water, noise, and so forth. (2002) suggested that a manager responsible for the environment plays a significant role in reducing negative environmental impact and enhancing positive impacts.

The fourth concept was proposed by Perdicoúlis & Durning (2007), which modified the concept from Eccleston & Smythe (2002). They put the sequencing of responsibilities between the EIA and EMS process as the main idea of this concept (see figure 2). A “top-down” character framework in EMS is the first step of this idea. According to the environmental policy, the project proposal includes specifications drafted in detail during the planning phase. Then it switches to EIA until the related permit is obtained from the government or authorities. A switch-back to EMS takes place by the project proposal's approval (incorporating the environmental management program), which can subsequently be developed into a proper EMS. The process then curves into the continuous improvement circle of an operational EMS.

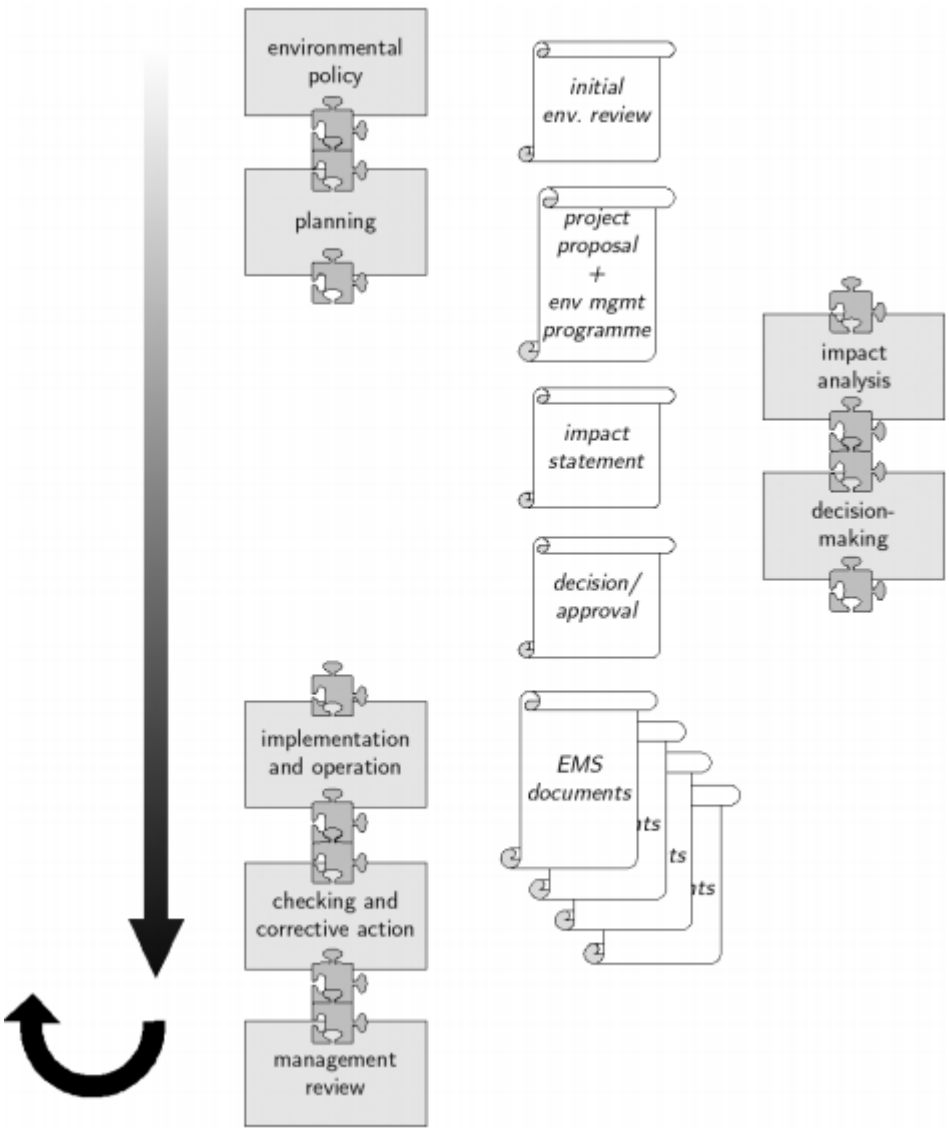

Figure 3 A concept of EMS-EIA-EMS(-EIA) (Perdicoúlis & Durning, 2007)

For an older, existing project or facility, the procedure may differ. The critical point is in the EIA report, which provides essential input to an Initial Environmental Review (IER) and should be reviewed since the IER contains large amounts of information. At this point, for the monitoring and auditing tool, EMS can be used in order to guarantee the actual implementation of the recommendations stipulated in the EIA (Ridgway, 1999).

As a fifth example, the possible integration of EIA and EMS can also be seen in a construction project in Mainland China. Interestingly, EMS (in that case: the ISO 14001) is less popular than EIA. It is partly due to the lack of efficient environmental management tools. From a

contractor's perspective, the EIA is understandable and popular to use. Compare to the EIA, the EMS is not well introduced in the construction sector. It leads to the assumption that there is less coordination between EIA and EMS. As a result, some environmental impacts still occur frequently, such as noise, dust, waste, and hazardous emission, even though EIA has already been approved. To cover this issue, the China Environmental Protection Bureau introduced the environmental supervision system and made environmental management more common (Z. Chen, Li, & Hong, 2004). An integrated scheme was proposed by Chen et al. (2004), as seen in figure 4.

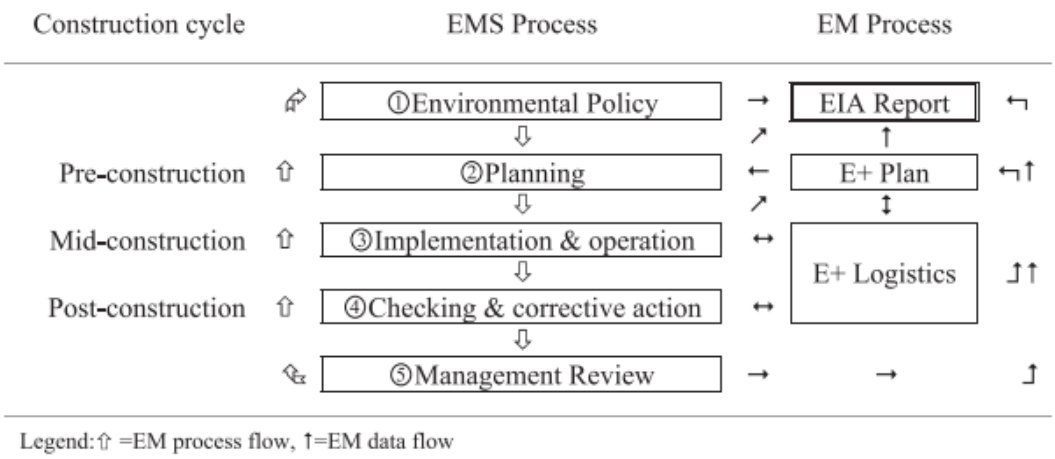

Figure 4. Integrated EMS-EIA in the construction industry in China (Z. Chen et al., 2004)

Chen et al. call this concept E+. Even if EMS was not appropriately accepted in Mainland China, through his idea, Z. Chen et al. (2004) have proved that EIA and EMS can still be integrated. The big picture is to share information and data through all stages and processes, which started by issuing environmental policies, planning, implementation, operation, checking and correction action, and management review. Z. Chen et al., (2004) study also proved that this method could be used to calculate the life cycle environmental impact in the industrial project construction.

Lastly, In practice, it might be found that there is no positive link between EIA and EMS, as suggested in a research study carried out by Slinn et al. (2007). Slinn et al. studied the

connection between EIA – EMS in industrial estate development in the UK. They concluded that it is difficult to identify the practical linkages between EIA and EMS. They came to this conclusion after interviewing 12 industrial project developments from 1995 to 2001. The site manager was questioned if they felt responsible for improving the environmental performance and how it might be achieved. The result shows that environmental improvement was not a respondent's priority. As a result, the linking between EIA and EMS in this sector was hard to find.

An overview of the Six Concepts of Integrating EIA EMS can be seen in Table 2.

Table 2. The Summaries of the Five Concepts.

Concept	Sources	Fields/Sectors	Integration aspects	Characteristic
Audit Component	(Burgham et al., 1998)	Federal organization	Audit EMS	A single-part Conceptual Model
A simple integrating EIA-EMS	(Eccleston & Smythe, 2002)	Not Specific	The monitoring process of EIA	
EMS Friendly Concept	(Sánchez & Hacking, 2002)	Gold Mining	Linking EIA steps to EMS through a causal mechanism.	A Conceptual sequence Model
EMS-EIA-EMS-(EIA)	(Perdicoúlis & Durning, 2007)	Not Specific	- EMS acts at the top of the process. - Sequencing responsibilities	
Construction Approach	(Z. Chen et al., 2004)	Construction industry	A sharing of information in all stages of EMS and EIA.	Fully integrated
Environmental Improvement	(Slinn et al., 2007)	Industrial Estate	Using EMS to improve the existing condition.	Not integrated

The table above shows the integration possibilities and failures of EIA-EMS in different sectors. A single-part conceptual model is illustrated by concepts from an audit component concept and a simple integrating EIA-EMS. In these concepts, a single component of those instruments was used by each other. For example, an audit from the EMS component was used for the EIA process by the Canadian Government. Then, a simple integrating EIA-EMS uses the monitoring process of EIA as a basis for preparing EMS' document. Therefore, it can be assumed that there is a link between the EIA process and EMS document and vice versa.

In a sequence conceptual model, the link is in the documents and the actors behind it. Both the concepts of EMS friendly and EMS-EIA-EMS-(EIS) have similarities, especially in connecting the EIA aspect and EMS aspect. At this point, the manager plays a significant role in integrating EIA-EMS. As Sánchez and Hacking (2002) said, managers have many tools to respond to any kind of problem and situation. Therefore, a strong commitment of managers is needed in order to integrate EIA and EMS. Since a manager cannot work alone, a good and competent staff (personnel) is required in order to support the manager.

Besides integrating concepts in document and personnel above, sharing of information is also possible to be found. As shown in the construction approach in table 2, this concept is fully integrated. In this concept, Chen et al. (2004) suggested that integration is in the documents, the availability of personnel, and information shared during the industry construction process.

2.5 Barriers

In this sub-chapter, potential barriers are identified from literature in order to help to answer sub-question 2.

Even though the integration of the EIA and EMS has potential, several barriers have been identified. For example, Ridgway (1999) recalled that the non-user-friendly format of the environmental impact statements in the EIA report does not readily assist in developing EMSs for the subsequent operational phase of development. For example, it may be challenging to implement (for EMS) the most crucial mitigation recommendations (e.g., design, management, monitoring) due to overwhelming summaries and lack of appropriate summaries or outstanding issues (Perdicoúlis & Durning, 2007). Because, sometimes, the summary section in the EIA report is too general and hard to use directly by the EMS. Then, Sánchez and Hacking (2002) reported the challenge to the integration process could be seen in several factors, such as the lack of interaction between the EIA and proponent teams; the independence of EIA and EMS consultancy services; the image of EIA as merely bureaucratic,

and the focus of EIA concerns merely on obtaining a favorable decision — i.e., approval. (Perdicoúlis & Durning, 2007).

Another barrier presented in many EIA reports is finding specific information in a particular place and time. The descriptive, analytical, and recommendations for mitigation are spread throughout a voluminous document that is less than user-friendly. As a result, it makes the post-project auditing of the predictions of an EIA report tough to do. Similarly, as recommended in the EIA report, it can also make the implementation process challenging to realize since they can be lost in the detail of the technical studies (Ridgway, 1999).

Chen et al. (2004) also addressed the obstacles in implementing the EIA and EMS integration in China. The study was begun by identifying why the government program persuades the business sector to apply EMS run ineffectively. Interviewed 72 contractors conducted a set of a survey in Shanghai, China. The study shows that the first main problem is the regulation itself and how the government encourages contractors. The contractors saw the EMS' regulation as vague, which make them unwilling to obey it. Then, the study also identifies that the availability of technology which environmentally friendly is not sufficient. Consequently, for the contractors who are already willing to apply EMS, the best available technology does not exist, making the process hard to implement. The third obstacle is less competitive pressures from competitors. Then the fourth is a less cooperative attitude in adopting EMS. The last is the uncertainty cost-benefit if implementing EMS.

Chapter 3. Research Design

Research design can be defined as the plan containing various ways of research to answer or examine the question of interest (Marczyk, DeMatteo, & Festinger, 2005). In this chapter, the various forms are structured into step-by-step activities that would be carried out to answer this thesis's research question and obtain the conclusion and recommendations to policy makers and related parties.

3.1. Research Framework

A research framework is defined as a schematic and highly visualized representation of steps that need to be taken to achieve the research objective(s). Mostly, the steps are the most important ones (Verschuren; & Doorewaard, 2010). Aligned with Verschuren & Doorewaard in designing research, this master thesis is described into seven steps as it is presented as follows:

Step 1. Briefly characterize the objective of the research project

This research aims to seek potential and barriers in implementing integrated EIA-EMS, give valuable input to policymakers in designing environmental policy, and fill the research literature gap. Then, it is hoped this research could inspire them to consider the benefit value of integrating EIA-EMS for the business sectors.

Step 2. Determine the research objects

In this research, the objects are environmental instruments, namely environmental impact assessment (EIA) and environmental management system (EMS).

Step 3. Establish the nature of the research perspective

Verschuren & Doorewaard (2010) define the research perspective as the theoretical framework consisting of a ready-made theory and concept available in the literature. Since there are some concepts in integrating EIA-EMS that the author found, for instance: a single-sequence conceptual framework from Eccleston & Smythe (2002), the EIA-EMS-EIA concept

given by Ridgway (1999), in addition to the EMS-EIA-EMS(-EIA) concept from Perdicoúlis & Durning (2007), or the E+ concept from Z. Chen et al. (2004) this research will assess the possibility of integration in every step of EIA and EMS.

This research focused on effectiveness and efficiency for management in the power plant sector in Indonesia. The identification process started by assessing how far the EIA document is taken into account to the EMS operational and *vice versa.*

Step 4. Determining the sources of the research perspective.

The sources of the research perspective are determined by using a systematic literature review to develop a conceptual model which consists of key concepts and theory. However, since the integration theory of EIA-EMS has not existed yet, this research used conceptual models from the literature. The key concept and the conceptual models to be used in this research are shown in table 3:

Table 3 Key Concepts and Conceptual Models

Key concepts	**Conceptual Models**
Integration model	A single-part conceptual framework A Conceptual sequence Model Fully integrated Not integrated

Step 5. Make a Schematic presentation of the research framework

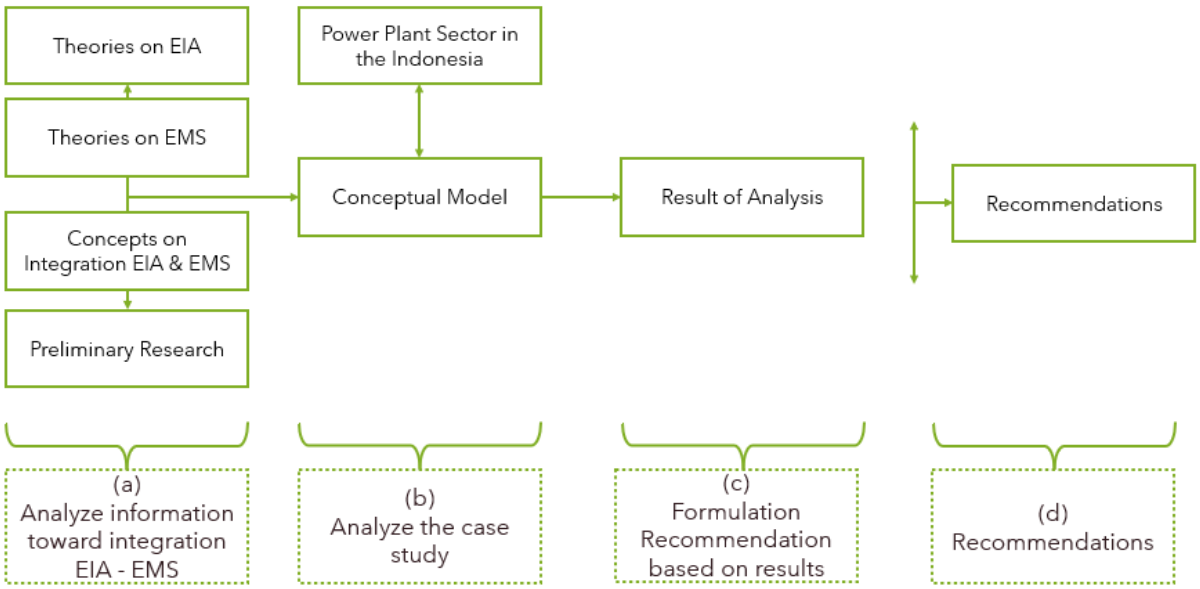

Figure 5. Schematic Presentation of research Framework

Step 6. Formulating the Research Framework

As depicted in figure 6, this research can be divided into 4 phases:

a) in the first phase, analytical information is conducted by doing preliminary research and analyzing the efficiency and effectiveness of integration EIA and EMS and their integration models.
b) The second phase compares the conceptual model and the current condition on implementing EIA and EMS.
c) As the result of analysis from the previous phase, this phase is about formulating recommendations based on the analysis of the results.
d) Recommendation for integrating the EIA and EMS.

Step 7. Check whether the model necessitates any changes

There are not required changes until now on the model.

3.3. Defining Concepts

As described in the research framework, this study identified five key concepts. To establish a coherency relates to the research topic, the following definitions will be used:

> **Environmental Impact Assessment** (EIA) in this research, the author combines the definition of EIA from Glasson et al. (1999) and Craik (2008), which can be defined as a legal procedure that contains a systematic process that examines the consequences of development activities to the environment in advance and helps decision-makers in

considering resources of global common concern from the politician, scientists, affected persons, nongovernmental actors, and even international community during the decision making process.

The environmental management system in this research will focus on ISO 14001.

Integration of EIA-EMS, Integration of EIA-EMS, in this research, this term refers to a process of synchronization and synergy between EIA and EMS in one project in order to seek effectiveness and efficiency for management. The integration itself is should not always only be in the whole process. Even if there is a single phase of either EIA or EMS connected, it is still called integration. For example, either only in the planning or the operationalization is still defined as an integration.

EIA follow-up in this research refers to the monitoring and evaluation phase of the EIA process, especially after the EIA has been approved. It carries out the necessary and appropriate steps: inspection/surveillance to check terms and conditions to be implemented; effect monitoring to determine whether the impact is as expected; spot checks and audits; and performance evaluation of EIA results and experience.

3.4. Research Strategy

The research methods used in this research are embedded in the case study approach. Each research unit (case) was examined independently by using a similar established pattern.

3.4.1. Research Unit

The research units are considering power plants in Indonesia which contain: 1) a well-established power plant; and 2) a new purposed power plant operated by the National Electrical Company (PLN). This sector is chosen to study because the power plant is the source of energy and an essential part of development. More importantly, producing clean energy is one of the sustainable development goals. In addition, PLN has a good reputation in sustainability program which can be proved by its achievement in gaining gold label on the

Corporate Performance Rating Assessment Program in Environmental Management (Proper), a program from the Ministry of Environmental and Forestry in Indonesia.

3.4.2. Selection of research unit

These specific criteria conduct the selection of research unit:

- A power plant project that is currently still in the planning phase.
- A well-established power plant.

3.4.3. Research Boundaries

To ensure the goal of this research can be achieved within the timeframe, the target is only limited to only two power plants. Since several companies own the power plant in Indonesia, this research will focus on the power plant owned by the National Electrical Company. Since the National Electrical Company owns many power plants, this research will focus on West Java and Bali Island. In West Java, this research will examine Pump Storage Hydro Power Plant, located in Cianjur Cisokan river and Cirumamis river for a power plant that is in the development process. Then, in Bali Island, this research will examine the Diesel and Gas power plant Pesanggaran Bali, which has a gold label on the Program for Pollution Control, Evaluation, and Rating.

3.5. Research Material

This sub-chapter explains the data and information required in this research and how to gather them.

3.5.1. Data and Information Required

Data and information required in this research are described in table 4 based on the requirements of each sub-research question.

Table 4 Research Question and Data/Information

Sub-Research Questions	Data/information required to answer the question
1. What are the integration possibilities of EIA and EMS in the power plant sector?	- Information from management about corporates' experiences in implementing EIA and EMS. - Government's perspective in integrating EIA and EMS.
2. What are the barriers to the integration of EIA with EMS in the power plant sector?	- Barriers from regulation - Barriers from corporates
3. What are the power plant stakeholder perceptions on the integrated implementation of EIA and EMS in Indonesia?	- Corporate perceptions on integrating the process of EIA and EMS

3.5.2 Source and Method of Data Collection

The source of data and method of data collection are shown in table 5.

Table 5 Source and Method of Data Collection

Sub-Research Questions	Data/information	Source of Data	Method of Accessing Data
What are the integration possibilities of EIA and EMS in the power plant sector?	Information from management about corporates' experience in implementing EIA and EMS.	Corporate: Management of National Electrical Company (PLN)	Semi-structured Interview
	Government's perspective in integrating EIA and EMS.	Indonesia Governments	Semi-structured Interview
What are the barriers to the integration of EIA with EMS in the power plant sector?	Barriers on regulation	Governments (cc. Ministry of Environmental and Forestry), corporates (Management of National Electricity Company), EIA consultant, EMS Consultant, and stakeholders	Semi-structured Interview
	Barriers on corporates	Governments (cc. Ministry of Environmental and Forestry),	Semi-structured Interview

		corporates (Management of National Electricity Company), EIA consultant, EMS Consultant, and stakeholders	
What are the power plant stakeholder perceptions on the integrated implementation of EIA and EMS in Indonesia?	the power plant business actor's perceptions on integrating the process of EIA and EMS	Corporate: Management of National Electrical Company (PLN)	Semi-structured Interview

Guidance for a semi-structured interview can be seen in appendix 2.

3.6. Data Analysis

3.6.1. Methods of Analyzing Data

Data and information gathered during this research will employ using qualitative data analysis.

Table 6 Methods of Analyzing Data

Sub-Research Questions	**Data/information**	Method of Analysis
What are the integration possibilities of EIA and EMS in the power plant sector?	Corporates' experience in implementing EIA and EMS.	Qualitative: an in-depth analysis of corporates' experience in implementing EIA and EMS
	Government's perspective in integrating EIA and EMS.	Qualitative: in-depth analysis on government perspective in integrating EIA and EMS
What are the barriers to the integration of EIA with EMS in the power plant sector?	Barriers on regulation	Qualitative: in-depth analysis on available regulation barriers in EIA and EMS integration
	Barriers on corporates	Qualitative: in-depth analysis on corporate barriers in EIA and EMS integration
What are the power plant stakeholder perceptions on the integrated	Stakeholder of corporate perceptions on integrating the process of EIA and EMS	Qualitative: in-depth analysis on Stakeholder of corporates perception on integrating the process of EIA and EMS

implementation of EIA and EMS in Indonesia?		

3.6.2. Validation of Data Analysis

In order to avoid bias in finding (and analyzing) data and information, this research was validated using the triangulation technique. The first thing to do is frame the findings under the theoretical perspective relevant to this research. Then, this process was followed by collecting data on the same topic but using different methods or sources. If there were, to some extent, unreliable data and information, then other sources were used to confirm or confront the answers from respondents to avoid a singular perspective at any point.

3.6.3. Ethical procedure

Subject to the Research Ethics Policy at the University of Twente (2019), this research complies with all terms and conditions in conducting research that involves human participants or/and using potentially sensitive data about and/or from individuals, groups, or organizations. Therefore, this research started only after approval from the supervisor and the Ethics Committee of the University of Twente. Furthermore, this research also ensures that all participants received the concern form to express their willingness and secrecy to be part of this research.

This research also ensures that there is no risk to the participants and no personal benefits for the researcher except for the academic purposes regarding the information they delivered. The participant will keep anonymity as long as the participant wants to.

Chapter 4. Findings

This chapter presents the findings of this research, which can be divided into three parts: 4.1 Integration possibilities; 4.2 Barriers to Integration of EIA with EMS, and; 4.3 The Stakeholder Perceptions in Power Plant Sector in Indonesia.

4.1. The integration possibilities of EIA and EMS in the power plant sector in Indonesia

The previous chapters have explained the role of EIA and EMS in protecting the environment from the black side of development. As environmental instruments, EIA and EMS have been applied in various sectors across the globe. Instead of conflict with each other, EIA and EMS might harmonize in the implementation. Even though they are using a different approach, mandatory and voluntary respectively, the idea of joining them in a project has begun since 1999 (Morrison-Saunders & Bailey, 1999; Ridgway, 1999). At least three concepts of integration are founded in kinds of literature which are linking EIA's monitoring process to EMS (Eccleston & Smythe, 2002), EMS friendly concept (Sánchez & Hacking, 2002), and EMS-EIA-EMS-(EIA) concept (Perdicoúlis & Durning, 2007). In literature, some experiences in implementing EIA-EMS integration were also found, such as in the waste management sector (Hollands & Palframan, 2014), environmental assessment sector (Burgham et al., 1998), and highway construction (Gallardo; et al., 2016).

This research has investigated the implementation of EIA-EMS integration in the power plant sector in Indonesia. Primary data has been gained by conducting online semi-structured interviews through governmental bodies, business sectors, EIA consultants, and the EMS certification body. Then, secondary data has added by gathering information from the literature. As a result, the EIA-EMS integration concept of implementation is not far away from the ideas above. However, there are some differentiates in practice. This result is further elaborated in the following paragraphs.

4.1.1. Integration EIA – EMS Concept in Power Plant Sector in Indonesia

Power Plants form a vital sector for a country. Power plant supports other sectors such as manufacturing, industry, farm, mining, and many others to contribute to a country's development (Adam, 2016). Based on pers release from the Ministry of Energy and Mineral Resources in 2020, Indonesia's installation grids were about 71 GW. This number is 1,3 GW more than the previous year. Furthermore, as of June 2020, the installed capacity of Steam Power Plant is 35,220 MW, Steam/ Gas Engines Power Plant (20,537 MW), Water/Minirohydro/Microhydro power plant (6,096 MW), Diesel Power plant (4,781 MW), and Geothermal PLT (2,131 MW), and other renewable energy power plants (2,200 MW) (Kementerian ESDM, 2020). Since renewable energy only contributes about 14.69 % (10,467 MW), the Indonesian Government demands the current installation produce clean and green electricity by abiding by the regulation and applying good environmental management.

Answering the government challenge, Electrical State Company (PLN), as a company that has ownership of an installed capacity of about 43.047 MW (60,7%), puts environmentally friendly values in its vision (PT PLN Persero, 2020). Then, PLN also encourages its power plant units to perform a good practice in producing electricity. In an online interview with Ajrun Karim on June 8th, 2021, a man from PLN who has the right position to explain this has been conducted to capture the vision's message. He said that the notion of PLN is divided into two parts, external and internal. External means PLN abides by the law and regulations available, including but not limited to the national code. While internal standards following technical operational in internal PLN (Karim. J, Personal Communication, June 8th, 2021). The external requirement will be applied by daily technical functional internally. This external-internal concept has become a starting point to investigate the existing EIA – EMS integration in this thesis.

4.1.2. Integration in Document

The integration in document concept is extracted from the idea proposed by Eccleston and Smythe (2002) and Burgham et al. (1998). This concept took one part of EIA and used it for EMS preparation and vice versa. For example, the monitoring stage of EIA is used for EMS

as the concept from Burgham et al. (1998) and EMS audit to prepare the EIA process used by the Canadian Government as explored by Burgham et al. (1998). Compare to other concepts: EMS Friendly concept, EMS-EIA-EMS-(EIA) concept, and Construction approach concept, the integration in document concept is easier to identify.

The research found that EIA–EMS's integration concept in the power plant sector is in line with the concept in figure 2, which was formulated by Eccleston and Smythe (2002). This concept is started by the stage of creating the EIA document. Once the government approves EIA, a company uses this document to develop the environmental management system ISO 14001. A representative of PT PLN Indonesia Power Pesanggaran Bali Power Plan, Karlina Wahyuningsih, admits this scheme during one of the online interviews on June 30th, 2021. Pesanggaran Bali Power Plant has been operating since 1974, ten years before EIA regulations took effect in Indonesia. Pesanggaran Bali Power Plant began to create the EIA document in 2004 and made an addendum in 2015. EIA plays an essential role in Pesanggaran Bali Power Plant. The respondent said that the EIA document always became a guideline for EMS. When preparing the EMS document, Pesanggaran Bali Power Plant uses the environmental impact management and monitoring plan available in EIA. (Wahyuningsih. K, Personal Communication, June 30th, 2021).

The ISO 14001 standard, especially point 6.1.2, requires companies to consider two things when determining environmental aspects: every changed, new or modified activity, product and service; and abnormal conditions and reasonably foreseeable Emergency (International Organization for Standardization, 2015). An online interview with a certification body, TUV NORD Indonesia, represented by Karlina Bone, that has the authority to certify a company for ISO 14001 was conducted on June 26th, 2021. During that interview, one of the questions was about understanding how the company usually fulfills item 6.1.2. of ISO 14001 standard. Bone. K emphasized that EIA plays a role in fulfilling the environmental aspects of EMS. In the document of EIA, there is a matrix that consists of environmental management

and monitoring plan. Usually, companies put the matrix as basic information of environmental aspects (Bone. K, Personal Communication, June 26th, 2021).

An online interview was conducted with Siddik, DA. (Chief of Environmental Services in West Java Province, June 28th, 2021) to know the governmental opinion about the practice above. Didi Adji Siddik said that it does not matter if companies put the environmental management and monitoring plan to ISO 14001 document since the most crucial thing is to prove that companies comply with the regulations. This practice also has a positive aspect in monitoring and evaluation, making the monitoring and evaluation more effective in time and document (Siddik. DA, Personal Communication, June 28th, 2021).

4.1.3 Integration in Personnel

This second concept is extracted from the integration EIA – EMS framework from Sánchez and Hacking (2002). In this concept, Sánchez and Hacking highlighted the role of an environmental manager in integrating EIA and EMS. The manager can influence the internal organization and external actors, such as the EIA consultant that he hired. PLN has a solid commitment to protect the environment. It can be seen in the vision-mission of PLN, which is to be a world-class company and operating as an environmentally friendly business (PT PLN Persero, 2020). This vision mission does not apply to PLN as a headquarters company only for its subordinates, namely PLN-Indonesia Power Pesanggaran Bali and PLN – Central Java Development Unit (Wahyuningsih. K, Personal Communication, June 30th, 2021).

For internal organization, the headquarters of PLN is build up in two ways (Karim. A, Personal Communication, June 8th, 2021). The First way is by encouraging its units to support PLN's grand vision-mission by transferring it to every team. Responding to this vision mission, PLN-Indonesia Power Pesanggaran Bali targeted getting a gold certificate for Pollution Control, Evaluation, and Rating. Fortunately, PLN achieved this target in 2020, and PLN-Indonesia Power Pesanggaran Bali got a gold certificate. The second way is to create certain divisions concentrating on the Occupational Health and Safety and Environment Program, including the EIA team and the integrated management system, involving the EMS team.

These divisions are directly under the general manager's subordinates, making it easier to hold routine and accidental meetings.

For external organizations, PLN is very selective in choosing its partners. When PLN holds bidding to recruit a consultant to assist PLN in preparing EIA documents, it demands many requirements: certifications for ISO 9001 and ISO 14001. This information is gained from an online interview with EIA consultants. Sarbi Moerhani Lestari Ltd is a consultant company located in Bogor, West Java, represented by Diding Achirudin during the interview. He has experience in joining bidding held by PLN. He said that holding ISO 9001 and ISO 14001 certificates are part of the minimum requirement to be selected as the winner of the bidding process (Achirudin, D. Personal Communication, June 23rd, 2021). Another experience comes from Global Inter Sistem, an EIA consultant located in Medan, North Sumatera, represented by Ayub Ashari. One of his clients was PLN. At that time, PLN taking the making process of EIA documents seriously. PLN staff want to ensure the EIA document is suitable and accessible to ISO 14001 standard (Ashari. A, Personal Communication, June 19th, 2021).

4.1.4 Integration in Information

After exploring the integration of EIA-EMS in documents and personnel, now is the time to focus on the information aspect. The information aspect is obtained from the concept of Chen et al. (2004) and Perdicoúlis and Durning (2007). The flow of information between the EIA team and the EMS team happens not only in the operational and monitoring of a project but also during the making process of EIA documents. In the previous explanation about integration in personnel, besides showing a strong correlation between personnel in PLN, this fact also performs the flow of information between them. For example, the EMS team joined the meeting while making an addendum of the EIA document for PLN-Indonesia Power Pesanggaran Bali. It freely gave inputs for the addendum document (Wahyuningsih. K, Personal Communication, June 30th, 2021). However, this flow of information does not show

a good correlation between a power plant (PLN-Indonesia Power Pesanggaran Bali) and a power plant still in the preparation phase (Cisokan Power Plant).

Cisokan Power Plant is a hydropower plant in upper Cisokan Pumped Storage with a capacity of 1040 MW. This power plant is under subordinate of PT PLN Unit Induk Pembangunan Jawa Bagian Tengah (PLN UIP JBT/The central part of Java development main unit). An online interview was held on June 6th, 2021, with the representative of PLN UIP JBT, Tito Erlangga Deca. From the interview, it was known that Cisokan Power Plant has started to make EIA documents since 2006 and got the environmental permit on April 12th, 2007 (Deca. TE, Personal Communication, June 18th, 2021). Until this thesis is done, there is no progress in the construction yet. However, PLN UIP JBT is still in progress, making several documents such as Environmental and Social Impact Assessment (ESIA), Land Acquisition and Resettlement Framework (LARF), Social Community Management Plan, and Biodiversity Management Plan. These documents are requirements that PLN must fulfill because Cisokan Power Plan got a loan from the World Bank (PLN UIP JBT - FTIP UNPAD 2021).

Like PLN Headquarter and PLN-Indonesia Power Pesanggaran Bali, PLN UIP JBT also has divisions for taking care of EIA and EMS. But the EMS is not running yet since the power plant is not established yet. Then, there is no connection for integrating information like sharing and exchanging information between the established power plants and the preconstruction power plant. Wahyuningsih, K. said, PLN-Indonesia Power Pesanggaran Bali has no contact with other power plants to discuss EIA and EMS. Deca. TE from PLN UIP JBT also noted that discussion happens internally in its unit for EIA and EMS even though Karim A. from Headquarters of PLN said a PDCA concept has already been applied in PLN, but it is hard to find in practice.

After identifying the integration possibilities described above, this research realizes that the power plant sector has its own style in integrating EIA-EMS since it is slightly different from the available literature concept. There are three correlation indications, which are in

documents, personnel, and information. Details of the integration EIA-EMS concept in the power plant sector will be discussed in sub-chapter 5.1.

4.2. The Barriers to Integration of EIA with EMS in Power Plant Sector in Indonesia

According to the seven interviews conducted, their overview indicates a good correlation between EIA and EMS in Power Plant Sector in Indonesia. Therefore, instead of using "barriers," this section used the term "challenges" to capture something that challenges can improve in the future. This section is divided according to the three types of barriers (challenges) identified: power plant commitment level, in-situ capacity, and legal aspects.

4.2.1. Commitment level

Regarding gathering data that has been conducted, this research noticed a problem with the commitment from power plant business actors. The first commitment challenge comes from the headquarters of PLN. The holding of PLN showed a significant intention to be a world-class company and environmentally friendly. It can be seen in the vision-mission of PLN, which is followed by regional unit levels and power plant levels. The headquarters of PLN also commit to sharing any good information between PLN's units. However, this concept is hard to find in practice. It seems like each unit struggle by itself.

A governmental body and EIA consultant notice another commitment problem. They did not specifically mention the power plant sector in Indonesia but various sectors in general. They noted that the biggest challenge is keeping companies' commitments written in the EIA document. Companies have to make an evaluation and report about their environmental management plan and environmental monitoring plan periodically. It usually happens since the companies see the EIA as just an administrative procedure to get a business permit. Thus, they never took the Management and Monitoring plan seriously (Siddik. DA, Personal Communication, June 28th, 2021; Ashari. A, Personal Communication, June 19th, 2021).

4.2.2. In-Situ Capacity

Challenge in human resources is a challenge in quantity and capacity. This information is gained from an online interview with PLN UIP JBT. Limited in number sometimes makes it hard to meet the deadline of the report. In PLN, EIA supervises occupational health, safety, and environment division, while EMS is under integrated management system division. The division of integrated management system is not only ISO 14001, but also other certifications such as ISO 9001, Occupational, health and safety management, ISO 50001:2015, ISO 55000:2014, ISO 17020, and many others. Even though PLN did not share the details of their employees who focused on those certifications, PLN still admitted that they lack numbers and capacity.

4.2.3. Legal Aspect

This sub-chapter focused on the Corporate Performance Rating Assessment Program in Environmental Management (Proper) from Indonesia's Ministry of Environmental and Forestry. This program wants to evaluate the performance of the person in charge of businesses and or activities in the environmental management sector. Siddik DA. acts as chief of the Environmental service of West Java Province and acts as an assessor for Proper, said that the Proper program has successfully triggered companies to comply with regulations and implement the environmental management system in their companies. Then, environmental management system like ISO 14001 requires a valid environmental document which is EIA (Siddik. DA, Personal Communication, June 28th, 2021).

The Proper program gives advantages to companies that want to join it. One of them is for export purposes. Therefore, many plantation companies in Indonesia want to join the Proper. Compare to big companies, Indonesia has many small-medium scale companies. Companies at this level may less interest in joining the program. As a result, they are also less interested in implementing ISO 14001. Finally, it was noticeable that they are also less interested in implementing EIA.

4.3. The Power Plant Stakeholder Perceptions on the Integrated Implementation of EIA and EMS in Indonesia.

This section presents the perceptions of actors from three power plant businesses (Headquarters of PLN, PLN UIP JBT, and PLN-Indonesia Power Pesanggaran Bali) concerning implementing the implementation EIA-EMS integration. As a comparison, perceptions from the government, consultant of EIA, and EMS certification body are also presented.

4.3.1 PLN(s) and Perceptions

This research interviewed PLN in three levels: headquarter, Parent Unit of Development, and manager project. They almost have the same perception about the correlation between EIA and EMS: EIA acts as the basis, and EMS serves as the continuous improvement paradigm.

EIA and EMS can support each other, according to interviewees. EIA acts as the essential means PLN can use for many proposes on environmental activities. This statement comes from Karim. A from headquarters of PLN. He said that every operational monitoring and evaluation, including ISO 14001, will refer to the EIA document. Therefore, it is not exceeded to say EIA is like scripture for follow-up environment activities. In addition, even though ISO 14001 is not mandatory but voluntary, many assessments require ISO 14001, such as Proper, Key Performance Indicator, and many other awards in the environment and social aspect. Then, the reviews ask how a company complies with related regulations, i.e., EIA (Karim. A, Personal Communication, June 8th, 2021).

” Eventually, there is a correlation between EIA and EMS, but not directly,” this statement comes from Deca TE from PLN UIP JBT. He pointed out the similarities between EIA and EMS, such as scooping and significant impact, evaluation process, and commitment from top management that existed in both. He also argues that EIA does not necessarily apply

to ISO but can be used as a reference in the preparation of ISO (Deca. TE, Personal Communication, June 18th, 2021).

Another perception comes from PLN-Indonesia Power Pesanggaran Bali. Wahyuningsih, K argues that EIA is part of ISO. For her, ISO is a system and EIA how to do the operation. ISO is using Plan, Do, Check, and Action (PDCA) concept, the EIA implementation, and monitoring processes. But talking about improvement and innovation is always in ISO. For example, there is a clause in ISO about the implementation of the operation. How to do that? EIA provides the guidance to implement and monitor like. After the results are available, the EMS Certification body will check them through an audit. After knowing what and where the shortcomings are, it is time for innovation and improvement to be made (Wahyuningsih. K, Personal Communication, June 30th, 2021).

4.3.2. Government Body

This research found that there are two perceptions from the Government side concerning implemented integration EIA and EMS. On the one hand, the government has successfully encouraged companies to comply with ministry regulations about the Corporate Performance Rating Assessment Program. Through this program, companies not only comply with the mandatory instrument but also a voluntary instrument. Three respondents confirmed it from PLN. All of them use EIA and EMS to fulfill some of the Proper requirements.

On the other hand, the government also does not care if a company wants to certify its company with ISO. It was confirmed by the Environmental Service of West Java Province. This research conducted an online interview with a representative of the Environmental Service of West Java Province, Siddik, DA. He said that the government wants every activity or project to comply with regulations by making EIA, gaining the environmental license, and doing an Environmental Management Plan and Environmental Monitoring Plan. Many companies use ISO to make their environmental management and monitoring plan more sustainable, but it is only one alternative.

4.3.3 EIA consultants and EMS certification body's Perceptions

This section explores the perception of EIA consultants and the EMS certification body about the integration of EIA and EMS in the power plant sector in Indonesia. In general, the EIA consultants are more open to EMS, while the EMS certification body is more open in its system.

This research was conducted online interviewed two EIA consultants from different cities in Indonesia, PT Global Inter Sistem and PT Sarbi Moerhani Lestari from Medan, North Sumatra, and Bogor, West Java. On the one hand, Karim, a representative of PT Global Inter Sistem, claimed that his company uses the same standard in preparing EIA documents for his client, except for a special request. Based on Karim's experience, his company had a client who requested the EIA document be made the same as ISO 14001 standard. Even though PT Global Inter Sistem prepared the EIA document suits for ISO 14001 standard, the document is still according to the law (Karim. A, Personal Communication, June 8th, 2021). On the other hand, PT Sarbi Moerhani Lestari is a consultant company with ISO 9001 and ISO 14001. In preparing the EIA document, PT Sarbi Moerhani Lestari always makes it according to ISO 9001 and 14001 standards even though there is no special request from the client (Achirudin, D. Personal Communication, June 23rd, 2021).

Another interview was also conducted with a certification body, TUV Nord Indonesia. About the EIA and EMS to be integrated, Bone, K., a representative of this company, claimed that it is possible to integrate EIA to EMS, but not EMS to EIA. Because EMS is an international standard, it cannot be changed easily. the EMS can be applied to companies from small to big, unlike EIA, which can only be used for a project or company with specific criteria. There is no direct mention of EIA in EMS clauses, but it stated compliance obligations related to the law and regulation of a country. Therefore, the possible way to integrate EIA and EMS is in this clause (Bone. K, Personal Communication, June 26th, 2021).

Chapter 5. Discussion

5.1. The Concept of EIA-EMS integration in the Power Plant Sector

There are five possibility concepts of EIA-EMS integration that are explained in chapter 2.4. However, they are slightly different from what this research found in the power plant sector in Indonesia. In general, the integration concept of EIA-EMS in the power plant sector is almost similar to Perdicoúlis & Durning's (2007) idea. Suppose in Perdicoúlis & Durning concept there is a sequence of responsibilities between EMS as shown in figure 3. the sequence of responsibilities is started by establishing the company's environmental policy. Then, the responsibility moved to the EIA team (also can be supported by EIA consultant) to prepare the EIA document and continued until it gained governmental approval. After the approval has come out, the EMS team took back the responsibility and finishing the EMS document to get an acknowledgment n from the ISO certification body. However, in this concept, the linking is only at the beginning of EIA and the ending of EIA. Fortunately, in the power plant concept, the linking is also in the EIA process itself. It can be seen in figure 6 below.

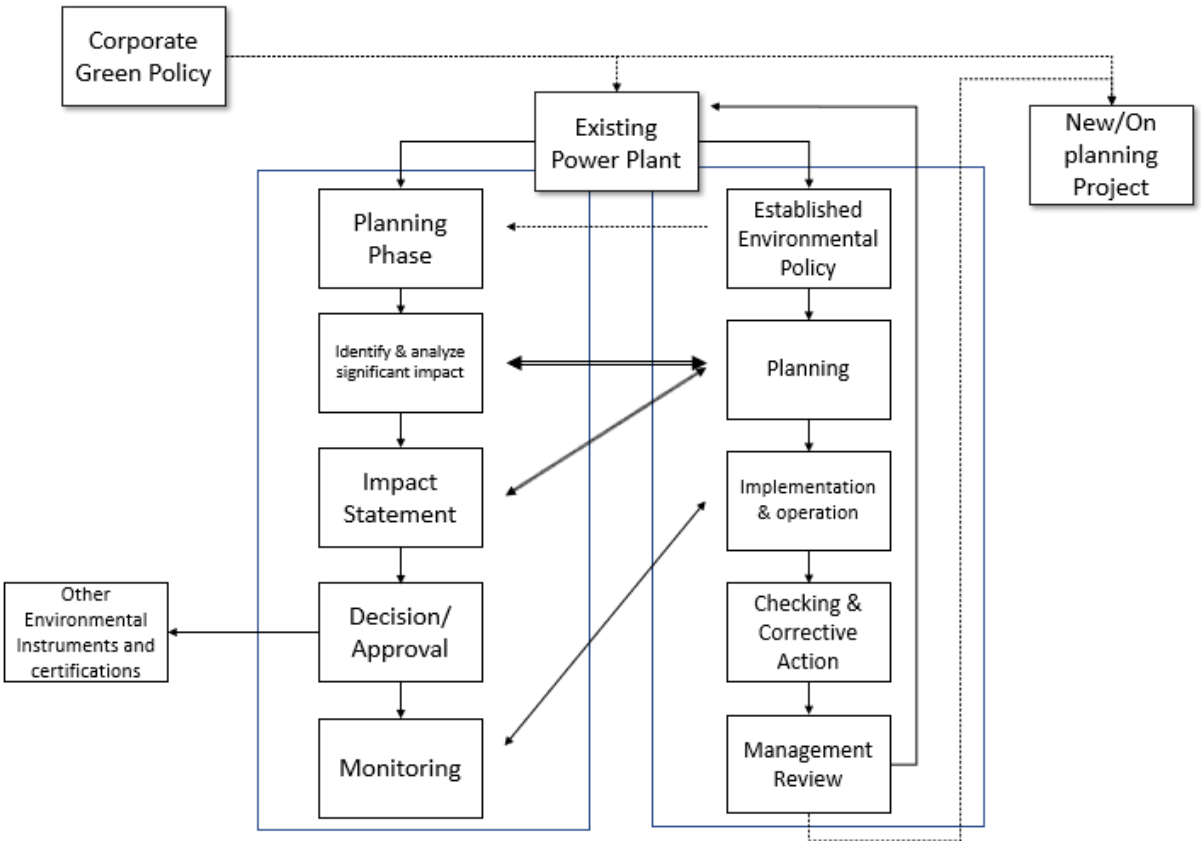

Figure 6. EIA-EMS Integration concept in Power Plant Sector in Indonesia

Before understanding the figure, it is essential to note that this research inspected two power plants: Diesel – Gas Power Plant Pesanggaran Bali (PLTDG Bali) and Cisokan Pump Storage Hydro Power Plant (PLTA Cisokan). PLTDG Bali has been operating since 1974 or a long time before EIA took effect in Indonesia. Then, PLTA Cisokan is now still fulfilling administrative and environmental assessment requirements for financing loans from the International Bank for Reconstruction and Development and Asian Infrastructure Investment Bank. Both power plants are under the supervision of PT PLN. These conditions affected the integration concept of EIA-EMS in the power plant sector.

As seen in figure 6, there are three parts in the integration concept of the power plant sector in Indonesia, namely corporate green policy (PT PLN), existing power plant (PLTG Bali), and new/on planning project (PLTA Cisokan). In the corporate green policy, there is a strong commitment from the top management of PT PLN to be a green company. It can be seen by the vision-mission of the company and its responses to the environmental instruments, both mandatory and voluntary. This commitment is shared with the power plants/projects under PT PLN.

At the power plant level, the commitment is translated into power plant commitment which is running independently. PLTDG Bali can be categorized as a project already established before the EIA regulation took force. Instead of EIA, the project must make an environmental impact evaluation study as long as there is no additional in the project regarding location, capacity, process, raw materials, supporting materials, and design. However, in 2005, there was an additional capacity in the PLTDG Bali location, which made PLTDG Bali have to make the EIA. At that time, PLTDG Bali hired Udayana University to prepare the EIA document alongside the personal and staff from PLTDG Bali itself (Wahyuningsih. K, Personal Communication, June 30th, 2021). Not only EIA, but PLTDG Bali also committed to gaining ISO 14001 certification. Therefore, while the EIA team was working with the EIA document, the EMS team was also involved in the process. The two-headed arrows show the collaborative working process in figure 6 from the EIA process to EMS Process and vice versa. After that, a looping arrow from management review to the existing power means there is room to improve the environmental performance. Unfortunately, this arrow is not linked to the new/on planning project.

This thesis assumes several reasons why the link between the existing power plant and the planning project is not found. Firstly, the human resources involved in this project were limited. Since PLTA Cisokan is the on-planning project, the work is under the supervisor of PT PLN Persero – Parent Unit of Development of Central Part Java I (UIP JBT). As a parent unit, UIP is not only coordinating PLTA Cisokan but also other power plants. The in-situ capacity

problems appeared when the interview was conducted. Secondly, PLTDG Bali and PLTA Cisokan have different types of power plants. PLTDG Bali is powered by diesel and gas, while PLTA Cisokan is powered by water. This difference makes the related problems also different. Lastly is about the location factor. PLTDG Bali is in Bali Island, and PLTA Cisokan is in West Java. Distance between both locations is more than 1000 Kilometers which makes coordination between them hard to do.

5.2. The Role of Government in Integrating EIA-EMS in the Power Plant Sector

This sub-chapter elaborates on the role of government in the integration of EIA-EMS. The discussion focuses on the Proper (Corporate Performance Rating Assessment in Environmental Assessment in Environmental Management) program from the Ministry of Environment and Forestry.

Based on data gathered from interviews, it is realized that a legal instrument stipulates the integration of EIA – EMS in the Power Plant sector in Indonesia. This instrument is called "*Program Penilaian Peringkat Kinerja Perusahaan dalam Mengelola Lingkungan Hidup*" (Proper)/Corporate Performance Rating Assessment Program. This program is from the Ministry of Environment, which was established in 1997. This assessment program assesses various sectors so, not only the power plant sector. This assessment program uses a selection criterion for industries that significantly affect the environment and those who care about their reputation (MENLHK, 2018).

The Indonesian government generated this rule because it was hard to find the effectiveness of the command-and-control approach in managing the environment lately. It only involves two actors: government as the supervisor and industry as the supervised. This approach could be practical if there is a solid commitment to enforcing the rules by the government. If not, the supervised party feels free to act recklessly and violate the regulations. There is an additional party in the Proper assessment program to get involved in this scheme, which is the market. The Proper engaged industries will announce their environmental performance to the public. Then, the public will decide to use or not their goods/services from the industries based on their level of concern for the environment. In principle, the public concern might drive the industry to improve its image as well as its environmental performance.

The Proper assessment program requires industries to abide by the mandatory rule, namely EIA and beyond the rules. In the EIA process, the industries are demanded to prepare EIA documents and gained approval from the authority. This also regards acting beyond the law.

The Proper requirements mentioned the environmental management system only, but not specifically stated ISO 14001. As quoted in the Regulation of the Ministry of Environment and Forestry No. 1, the year 2021 on Proper, the industry is categorized under Environmental Management Systems only if: 1) environmental aspects of products produced by the industry and related activities are identified; 2) including all main activities of the industry. Interestingly, most industries translated this term into ISO 14001. Especially for them who want to get a good predicate in the Proper. It can be confirmed by looking at companies be in categorized as gold and green in the Proper 2020. Most of them were subscribed to ISO 14001.

Based on the explanation above, the Proper can be facilitative, providing a format to follow voluntarily. Seriously taking the voluntary scheme makes the industries have an immense potential in achieving the "gold label." Through this concept, enterprises realize that the EIA rule is not just an administrative document used for business licensing but can also be used as a primary document to prepare ISO 14001. The government and the business sector admit the benefit of applying the Proper rules. From the governmental side, the Proper rules make it the government easier in conducting monitoring and evaluation (Siddik. DA, Personal Communication, June 28th, 2021). Then, from the business perspective, following the Proper rules increases their environmental image (Karim. A, Personal Communication, June 8th, 2021).

Even though the Proper rule gives a promising approach in combining the mandatory and voluntary rules, it is not for all industries. There are specific criteria of sectors for the Proper participants which are here enlisted: (i) environmental licensing, (ii) produced export-oriented products, (iii) exist in the stock market, (iv) become the public's attention, and/or (v) have a significant effect on the environment. Those criteria exist in the first screening of the Proper. If a company fails in this step, it does not deserve further assessment. Even further, in this research, I argue that this is the drawback of the Proper. Even further, it was noticeable that Proper was not able to cover small industries.

5.3. Interrelationship between Stakeholders perspectives

This sub-chapter discusses the interrelationship between stakeholder perspectives in the integration process of EIA and EMS.

The interview session gives an overview of the interviewee's perspective regarding the connection between EIA and EMS. In general, their perspectives can be categorized into three streams. The first stream said that EIA is the most important one represented by the governmental body and EIA consultants. The second stream said that EMS is more important than EIA, represented by the EMS certification body. Then, the last stream sees EIA and EMS are equally important, represented by the business sector.

This research reckons that the stakeholders' interest influences their perspectives. For example, as the governmental body, the financial benefit is not their main focus but environmental interest. Thus, the government can focus on protecting the environment by controlling development and enforcing regulations, including the EIA. Therefore, when the government body was asked about EIA-EMS integration, it did not pay much attention. Whether the industries are applying the ISO 14001 or not, it is not a government concern. But, when the industry used the ISO 14001, it usually makes it easier for them to make a monitoring report, which also helps the government monitor them. On the contrary, if there is no EIA, a new industry cannot establish and run in Indonesia.

The EIA consultants almost have the same perspective as the government. As the one who helps the industry preparing EIA documents, the EIA consultant bridges government requirements and what the industry needs. It is acceptable for the EIA consultant to prepare and adjust the EIA document as the industry wishes, including ensuring its use for further application. However, the process is permissible as long as it is still on EIA standard.

EMS certification body, which Karlina Bone represents, has a slightly different opinion. She disagreed with the statement of EIA-EMS integration. She saw this statement has to adjust the ISO 14001 standard to the national regulation (EIA). She said it is impossible to change the ISO 14001 standard since it applies internationally (Bone. K, Personal Communication, June 26th, 2021). Therefore, she is more likely to use "synergy" terminology because the ISO 14001 can accommodate the national regulations without changing the ISO standard.

In the business sector, especially for the power plant, both EIA and EMS are equally important. The PT PLN said that EIA is needed to show that the company is abiding by the law. Then, applying the ISO 14001 is helpful for the company's brand image. PT PLN also uses data and recommendations from EIA to other environmental instruments such as OHAS, life cycle analysis, and environmental and social impact assessment. At this point, it can be seen that there is a natural link between EIA and other instruments.

Chapter 6. Conclusions and Recommendation

This chapter summarizes the main findings aiming to answer the main research question driving this research project. In that way, few conclusions were elaborated and discussed here as follows.

6.1. Conclusions

The main research question was “How to integrate the potentials of the EIA and EMS schemes to boost their expected single benefits?” This research question was then divided into three sub-questions that depict relevant aspects of the potential integration of EIA and EMS in the power plant sector: the integration possibilities, the barriers, and the stakeholder perceptions. Online interviews with seven respondents (appendix 1) and a literature review have been conducted to answer these questions, and the finding was gathered in chapter 4. From highlighting some of them, some conclusions were drawn.

1. What are the integration possibilities of EIA and EMS in the power plant sector?

After answering the first sub-question of this research about the integration possibility of EIA and EMS in the power plant sector in Indonesia, this research concluded that there is not only just a possibility but clearly already implemented. It can be seen in three substantial aspects: documents, personnel, and information. Based on the literature, document type of integration is not only an EIA document used for EMS preparation, but it also could reverse. However, this research only proved the first type which the EIA document is used for Environmental Management System, ISO 14001. The EIA document plays a role in fulfilling compliance obligation aspects and providing a matrix for Environmental Management Plan and Environmental Monitoring Plan. Integration in personnel is proved by PLN by creating divisions in three different level structures: holding, parent unit of development, and power plant operation. These divisions are under the supervision of one manager at each level who has the same vision-mission with PLN holding. These divisions also proved a sharing of information about the EIA-EMS process internally in each group of structures. However, sharing information across the divisions is hard to find.

2. What are the barriers to the integration of EIA with EMS in the power plant sector?

Even though the possibility of integration of EIA – EMS is clearly detected in the power plant sector, barriers still exist in the process. As questioned in the second sub-question, barriers to implementing EIA-EMS integration consist of three aspects: commitment, in-situ capacity, and legal aspects. Commitment in this context relates to responsibility in sharing information. In the internal of the unit, the commitment of the environmental team, both EIA and EMS, is well established. However, sharing of information across the power plant unit is hard to find.

Then, the problem with in-situ capacity, especially quantity and capacity, makes it hard to optimize the job. These problems usually appeared when various deadlines come at the same time. Next, for the legal aspect, the Proper assessment regulation has successfully combined command-and-control and voluntary approaches. It makes companies not only abide by the mandatory regulation (EIA) but also voluntary regulation (ISO 14001). However, this regulation only attracts a particular company, especially huge companies, not small and medium companies.

3. What are the power plant stakeholder perceptions on the integrated implementation of EIA and EMS in Indonesia?

This research also identified that stakeholder perceptions as the third sub-question of this research. After conducting the interview, this research concluded that the stakeholder perceptions are varied. From PLN perspectives, integrating EIA and EMS is look like part of their daily activity. Thus, they are already used to the integration concept. A different perception comes from Provincial Government. The government concentrates more on environmental licensing, business licensing, and implementing environmental management and monitoring plans. The government does not care either company wants to certify their company according to international standards or not. However, if companies wish to license ISO 14001, it will help them monitor and report EIA implementation and proper assessment. Then, EIA consultants are more flexible in preparing EIA documents. They can follow their client's instructions to make the EIA document become more EMS friendly. Finally, the EMS

certification body can accommodate rules and regulations related to a country's environment to EMS compared to in reverse. Since EMS 14001 is more open to the law and its changes.

Regarding the answer to the three sub-research questions above, it is time to answer the main research question, "**How to integrate the potentials of the EIA and EMS schemes to boost their expected single benefits?**" This research may conclude that the integration process can be achieved by synergizing three related actors: government, business sectors, and EIA consultant & EMS certification body. Government plays a role in creating a regulation like the Proper regulation, which facilitated the application of command-and-control approach and voluntary approach. The environmental concern of the business sector is not solely coming from the headquarter of the company, but it has to be strengthened by the project at the unit level. This environmental concern can make the correlation between environmental instruments run smoothly. Then, as supporting bodies for a company, EIA consultant and EMS certification body help the company abiding the law and environmental performance at the same time. Hence, through the synergy, the optimum benefit of both EIA and EMS in protecting the environment and gaining a positive image for the company can be achieved.

6.2. Recommendations

This research found that actors and legal aspects mainly influence the integration of EIA and EMS. Following this line of thought, several recommendations are to be elaborated for both practitioners and future research (section 6.3).

Practitioners

First, a solid commitment to the internal business is needed to be improved. This commitment is also an essential part of sharing information across units within the business sector. By enhancing the pledge and sharing knowledge, a new unit from the business sector will also get a gold predicate in the upcoming years. It is hope number of companies with a gold certificate on Proper can increase drastically,

Second, as discussed in sections 4 and 5, Proper shows to be an excellent tool to make companies abiding the law and do it voluntarily. However, it only attracts large companies. Therefore, it is good to create an alternative way to make the Proper program suitable for small-medium scale companies, as well. It can be done, for example, by providing incentives or subsidies for companies that want to get ISO certificates.

6.3. Limitation and Recommendations for Further Research

This research has limitations that are needed to be considered for further study. Due to Covid-19, the interviews were only possible to be conducted through an online platform. Hence, it is recommended to have site visits to gain real experience and data for further research. Then, this research only interviewed two types of power plants: gas-diesel power plant and hydropower plant, which is very limited to be able to elaborate conclusions for the whole power plant sector. Hence it is recommended to interview all types of power plants in the country where research will be conducted. Moreover, this research only interviewed one representative from the governmental side. It is good to have respondents from the Ministry of Environment and Forestry to provide a more complete perspective.

Lastly, the next research can also be improved by studying deeply how far the existing integration of EIA and EMS is by directly comparing both documents. This research design cannot perform by this research, again due to the limitation of time and movement during the research process.

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APPENDICES

Appendix 1. Matrix of Participants

	Name of Participants	Affiliation	Type	Interview Method
1	Ajrun Karim	PT PLN Persero (headquarters)	Business	Online interview
2	Tito Erlangga Deca	PT PLN Persero – Java Central Region 1	Business	Online interview
3	Karlina Wahyuningsih	PT PLN Indonesia Power- Diesel dan Gas Power Plant Pesanggaran Bali	Business	Online interview
4	Didi Adji Siddik	Environment Service of West Java Province	Government	Online interview
5	Karlina Bone	TUV Nord Indonesia	Certification Body	Online interview
6	Ayub Ashari	PT Global Inter Sistem	EIA Consultant	Online interview
7	Diding Achirudin	PT Sarbi Moerhani Lestari	EIA Consultant	Online interview

Appendix 2. A Guidance for Semi-Structure Interview

List of Questions:

1. Governmental Bodies
    a. General
        i. Is there any correlation between EIA and EMS/ISO 14001? *If yes*, How far?
        ii. What do you think in case a company uses the EIA's document as a basis of Environmental policy?
        iii. What do you think if there is a commitment from the company to include the environmental policy in the EIA proposal?
    b. Potential
        i. Is there any possibility to integrate EIA and EMS/ISO 14001? Can Indonesia's regulation accommodate it?
            - No, why?
            - Yes, how?
        ii. If EIA can support EMS or vice versa, how should it be?
        iii. If a company has a good reputation in implementing EMS, and it wants to build a new facility, can the reputation become a positive value for the EIA process?
    c. Barriers
        i. What do you think about the possible barriers in implementing integration EIA and EMS/ISO 14001?

2. Business Sectors (PLN)
    a. Business Perceptions
        i. Related to the environmental aspect, what kind of environmental report do you routinely make? (e.g. EIA, EMS, or others)
        ii. I see that one of your mission is operating an environmentally friendly business, what do you think is the role of EIA in building this mission?
        iii. Do you still make a report regarding the monitoring and evaluation of EIA at present? How often do you do that (in a year)?
        iv. Do you use the EIA document for other purposes?
        v. I see that you have ISO 14001 certifications, can you tell me the reasons for being ISO14001 certified?
        vi. Do you think is there any correlation between EIA and EMS/ISO 14001? In which sense?
        vii. Do you have a strong commitment to putting the environmental policy of EMS within EIA's processes?

    b. Potential
        i. How often do you make reports and evaluations base on ISO 14001 certification?
        ii. Do you consider the environmental impacts of the EIA to be put in the EMS/ISO 14001?
        iii. When you are drafting the Environmental Policy for EMS, do you consider using EIA's document as a basis of the policy?
        iv. Do you assign your environmental management in the drafting process of EIA's document? If yes, how far is its role in the process?
        v. Do you use your environmental policy of EMS from your previous projects before drafting EIA's document of your new project?
        vi. When you are drafting EIA's document, do you consider that the document will be used for EMS?
        vii. Do you calculate the life cycle environmental impact in the EIA drafting process?
        viii. Do you share the information from EIA's process with your EMS team? And do your EMS team give feedback in regard to that?

    c. Barriers
        i. What possible barriers do you think exist during implementing the integration of EIA and EMS/ISO 14001?

3. Consultant of EIA
    a. Potentials
        i. What do you think if the ISO 14001 and EIA can be integrated? How?
        ii. When you are assisting the drafting process of the EIA, do you prepare the document to be used as a basis of environmental policy for EMS?
        iii. When you are drafting EIA's document, do you consider that the document will be used for EMS?
        iv. Do you receive a strong request from the project owner to put EMS in the EIA's process?
        v. Do you calculate the life cycle environmental impacts in the EIA drafting process?

    b. Barriers
        i. What possible barriers do you think exist during implementing the integration of EIA and EMS/ISO 14001?

Appendix 3. Transcript of Interviews

Transcript of Interview

Interviewee : Didi Adjie Siddik

Institution : **Environmental Service of West Java Province**

Date : 28 June 2021

Governmental Bodies

c. General

i. Is there any correlation between EIA and EMS/ISO 14001? *If yes*, How far?
To how far I cannot answer, but for correlation, there is. EIA is a requirement to be able to get activity and get a business license. If he does not take care of the environmental approval, he does not meet the requirements for obtaining a business license. The environmental approval is now going through a document assessment process. The form can be AMDAL or UKL UPL. An activity must have a commitment. It is important that there is a commitment to what kind of environment it is. That environmental commitment can be stated in environmental documents because there is an RKL RPL. It is a promise. Then why does KLHK have a Proper program, a ranking program to assess compliance seen from how and to what extent it implements environmental documents that already exist or are owned. So, the correlation is yes, if a company wants to follow ISO, at ISO, it must have a valid environmental document in the form of environmental approval. EIA as a requirement to join ISO
.

ii. What do you think in case a company uses the EIA's document as a basis of Environmental policy?
Environmental permit, now changed to environmental approval. Later during the screening, it will be known that the company must have an Amdal or enough RKL RPL, depending on the (significant level of activity based on the law). Now judging by the risks, so it's a prerequisite. It's an obligation. So, if there is an activity, he must have a commitment to environmental management and monitoring. So, like it or not, it must be done because it is a rule.

iii. What do you think if there is a commitment from the company to include the environmental policy in the EIA proposal?
ISO is only for business processes. I've been working on PROPER for a long time. The big companies force me to join the proper, even though it's voluntary. Why? Because in order for him to be able to manage ISO, he must have a letter of environmental recommendation, one of which is proper, which is an assessment of the performance of how he manages his environment.
- Is PROPER effective? Yes, because they need it. For example, for plantations, if there is no proper, they cannot export. If ISO is only for business processes, EIA is for sustainable development. So not for sale. So, if there are activities, then there are obligations that must be obeyed. There must be a commitment if there is an impact, how to manage it, which is realized through its RKL and RPL.

d. Potential

i. Is there any possibility to integrate EIA and EMS/ISO 14001? Can Indonesia's regulation accommodate it?

- No, why?
- Yes, how?

Will not affect. From the government's perspective, if he (the company) already has it, if there is no change, then it can be used continuously. As long as there is no process change, no additional capacity, if he wants to create a new one and is still in the same area, the mechanism does not have to create a new document, but there is an addendum. Yes, what is the addition? But later, it will be discussed, including RKL-RPL, because the impact will change. So how will he manage it? So don't see the ISO. The important thing is that if he changes for companies like that, he will ask us for directions first on what to do according to the existing regulations.

ii. If EIA can support EMS or vice versa, how should it be?
Basically, an activity can operate if it has a commitment. It used to be in the form of an environmental permit. If we get it, we will see its commitment through its obedience. How far does he carry out the management and monitoring? One of the mechanisms is PROPER. It seems that in the document, they have an obligation to report every three months or every six months. What is done is in accordance with what is stated in the RKL RPL document. Right, EIA has a matrix, what the company has to manage, what the company has to check, and what the company he has to monitor. The document looks at his commitment to monitoring, one of which is how he reports. For example, he produces liquid waste. He has to report it once a month, and then the property will check whether they do this or not. And what was the result? The measurement results. It's a lab result. Are the parameters in accordance with the quality standards, in accordance with the measured parameters. And what are the consequences? Meet the quality standards or not. You see it every month. So if the proper sees its compliance, it is through it. From four aspects. First: from environmental documents, have or not; two, how to manage liquid, air, and hazardous waste. These four aspects are in PROPER. So don't look at the EIA. So the EIA was after he got the environmental permit.

iii. If a company has a good reputation in implementing EMS and wants to build a new facility, can the reputation become a positive value for the EIA process?
No special treatment. All are treated the same. EIA is prepared prior to any activity or the planning process of an activity. That's what we evaluate, so we don't look at reputation. What we see is how the quality of the document. Because it is a scientific study, right? So it depends on who made it.

e. Barriers

i. What do you think about the possible barriers in implementing integration EIA and EMS/ISO 14001?
There are no obstacles in terms of government. Companies want to follow ISO or not; it is not in the interest of the government. The problem is if he carries out activities but does not have environmental documents because he has no commitment. So there are no obstacles because the path is different—those who follow ISO for their own interests, for example, in the context of export. Meanwhile, we focus on protecting the environment for sustainable development.

Transcript of Interview

Interviewee : Ajrun Karim

Institution : PT PLN (Persero)

Date : 8 June 2021

Business Sectors (PLN)

a. Business Perceptions
   i. Related to the environmental aspect, what kind of environmental report do you routinely make? (e.g., EIA, EMS, or others)
   PT PLN acts as the person in charge of all environmental reporting. The reports include AMDAL, ESIA, EMS, internal audits, evaluation of corrective actions, environmental compliance audits, and quarterly, semester, and yearly performance assessments. Some of these projects are carried out by themselves, and some are hired by other parties (consultants).

   ii. I see that one of your mission is operating an environmentally friendly business; what do you think is the role of EIA in building this mission?
   Green context exists internally and externally. External means following existing regulations, whether national, international, or local. Internally, it meets our operational, technical requirements (PLN), such as vibration thresholds, labor aspects, and all matters related to the environment.

   iii. Do you still make a report regarding the monitoring and evaluation of EIA at present? How often do you do that (in a year)?
   Some are four times, and some are twice. For the quarterly, for example, the B3 waste aspect, the air, and water aspect. There are those per semester, whether it is to the DLH Regency, province, or the Ministry of Environment and Forestry.

   iv. Do you use the EIA document for other purposes?
   The environmental document, like EIA for me, acts as a basis, basic foundation, or scriptures for follow-up environmental activities. So, everything will be returned to the EIA document as planned in advance. When asked whether there is a correlation, there is a very strong correlation because everything refers to the EIA document.

   v. I see that you have ISO 14001 certifications. Can you tell me about the reasons for being ISO14001 certified?
   Although ISO is not mandatory, it is voluntary, but many things will be related to the assessment that considers the existence of the ISO itself. For example, Proper assessment, KPI (Key Performance Indicator) performance, other environmental or social awards that require the unit to already have ISO 14001. ISO as self-evidence.

   vi. Do you think there is any correlation between EIA and EMS/ISO 14001? In which sense?
   (Already answered in question iv)

vii. Do you have a strong commitment to putting the environmental policy of EMS within EIA's processes?
ISO recognizes two levels, the corporate policy level and the policy level per work unit entity. As a corporate, we have. The work unit still needs to make more policies, which may differ in operational specifics. For example, the generation and transmission units between steam and gas, of course, are different things because it adapts to the conditions of each work unit. However, the general requirement remains a national corporate policy.

b. Potential
   i. How often do you make reports and evaluations base on ISO 14001 certification?
   In the PDCA (Plan, Do, Check, Action) concept, reports and evaluations are carried out in stages and periodically. It is tiered from the unit level to the central level, quarterly, six-monthly, and yearly.

   ii. Do you consider the environmental impacts of the EIA to be put in the EMS/ISO 14001?
   Of course, yes. For example, in the process of taking water test samples. In the EIA, the water test sampling process has three sampling points, namely the point of arrangement, measurement, and monitoring. So, the EIA document becomes a reference for making requirements in more operational detail which will later be carried out.

   iii. When you are drafting the Environmental Policy for EMS, do you consider using EIA's document as a basis of the policy?
   Yes.

   iv. Do you assign your environmental management in the drafting process of EIA's document? If yes, how far is its role in the process?
   Since 2016, PT PLN has had a special structure related to health, safety, and environment consisting of three VPs (environment, K3, and security). PLN is very concerned about the environment. This can be seen from the EVP structure, division head, 1 VP, five field managers, which in my opinion, is the best support since PLN was founded. This structure was inaugurated in early April 2020. Now the environment is an area that has received extraordinary support from PLN until it is given a very massive allocation of functions.

   v. Do you use your environmental policy of EMS from your previous projects before drafting EIA's document of your new project?
   The PLTU process (for example) consists of five stages of planning (design), pre-construction, construction, operation, and post-operation. These five stages have been formulated from the beginning in accordance with the basic environmental values that have been agreed upon. This means that, in fact, there are general values that are created from the beginning of planning to the operation process that will complement each other from a better unit. It already exists. If there is a good unit, then there is a process called Observe, imitate, modify (ATM).

   vi. When you draft EIA's document, do you consider that the document will be used for EMS?

The EIA stage is ahead of ISO. So that after the AMDAL is complete, the ISO will adjust. Iso sometimes there are things that haven't been done, but overall they have. ISO will later adjust and integrate with the processes in the EIA document.

vii. Do you calculate the life cycle environmental impact in the EIA drafting process?
Of course, that's what I said earlier. The EIA considers life cycle analysis, which consists of 5 stages, planning, pre-construction, construction, operation, post-operation.

viii. Do you share the information from EIA's process with your EMS team? And do your EMS team give feedback regarding that?
Usually done by the same field, but people can be different. So there is a possibility of synergy.

ix. During the process of making the AMDAL document, was there information sharing with the EMS team? And did the EMS team give your feedback on that?
Yes

.

c. Barriers
   i. What possible barriers do you think exist while implementing the integration of EIA and EMS/ISO 14001?
   The source of EIA is a regulation that is sourced from the minimum standard values that must be followed, but sometimes there are obstacles to fulfill it both internally and externally. For example, coal for steam power plants, we have a contract to supply coal with a sulfur content below 2%, but due to unfavorable market conditions, so that the coal is exported to foreign countries as a result, the remaining carry coal in the country is of poor quality. As a result, the quality standard values in the AMDAL and ISO are finally exceeded. This is sometimes a concern, because in the process of an activity, of course the parameters are very complicated, not only one thing but many things, this is only from one fuel input source. Not yet suppose there is a spare part damage, which turns out the spare part can't come. Not yet social problems such as obstructions, demonstrations, or incompetent resources that lead to lack of operations, operational inaccuracies that result in discrepancies.

Transcript of Interview

Interviewee : Tito Erlangga Deca

Institution : PT PLN (Persero) – Java Central Region 1

Date : 18 June 2021

Business Sectors (PLN)

a. Business Perceptions
   i. Related to the environmental aspect, what kind of environmental report do you routinely make? (e.g., EIA, EMS, or others)
   Preparation of monitoring Environmental Management Plan and Environmental Monitoring Plan (RKL-RPL) reports on the implementation of environmental documents, including obligations for Environmental Protection and Management, including education and training, as well as reporting and progress. Nothing is related to EMS yet.

   ii. I see that one of your mission is operating an environmentally friendly business. What do you think is the role of EIA in building this mission?
   RKL-RPL is a commitment from PLN to manage the environment, in the form of an important impact, how it does not damage the environment. By managing the environment, is one form of supporting the environment so that it is not polluted by PLN's activities. Commitment and implementing this is one form of supporting PLN's vision and mission. Construction meets legal aspects which essentially do not pollute the environment.

   iii. Do you still make a report regarding the monitoring and evaluation of EIA at present? How often do you do that (in a year)?
   Twice a year.

   iv. Do you use the EIA document for other purposes?
   In the power generation sector, there are three main components, namely generation, transmission, and substations. The locations vary. Some are adapted to the surrounding environment. Well, there is also something like a retractable transmission, what kind of impact. For example, social impact, from the data, the impact aspect is taken for other transmission activities, which are indeed mostly social.

   v. I see that you have ISO 14001 certifications. Can you tell me the reasons for being ISO14001 certified?
   UIP JBT currently is being set up for the ISO. The point for us is how do we manage the environment consistently, from planning to implementation, monitoring until we see corrective actions so that all environmental management is in accordance with existing regulations. 2) how to support PLN to support the green program in accordance with quality standards based on its guiding standards so that when there is a change in people (HR), the implementation standards are already in place and standard. So, the standard of management will continue to be carried out in addition to uniform procedures that will later be used in the unit.

vi. Do you think there is any correlation between EIA and EMS/ISO 14001? In which sense?
There can be, but not directly related. Because, in general, the process is the same. In EIA, there is a scoping process and an important impact. In ISO, there is such a thing. Then the evaluation process is the same. Including the commitments that are required to the proponent in the EIA in ISO, there are also policies from top management. However, it does not necessarily apply to ISO but can be used as a reference in the preparation of ISO. Then, EMS is a tool to help Proper because the programs are formed from the system itself.

vii. Do you have a strong commitment to putting the environmental policy of EMS within EIA's processes?
EIA Cisokan started in 2008, and repairs in 2011. At that time, there was no EIA before or ISO before. We will certify the new system in 2020. So we have not included top management commitments into the EIA because there is no such plan.

b. Potential
i. How often do you make reports and evaluations base on ISO 14001 certification?
Not yet certified.

ii. Do you consider the environmental impacts of the EIA to be put in the EMS/ISO 14001?
The impact on the project is possible for the preparation of the impact in ISO, and this has been done during ISO certification.

iii. When you are drafting the Environmental Policy for EMS, do you consider using EIA's document as a basis of the policy?
N.A.

iv. Do you assign your environmental management in the drafting process of EIA's document? If yes, how far is its role in the process?
In the central Java unit, there is a control bureau structure related to K3L (occupational, health, safety, and environment), which consists of a manager equivalent to basic management, overseeing two supervisors, namely environmental and OH&S. And EIA itself includes environmental ones. This is the parent structure. Then in the implementation unit, there is one more structure under the project, namely the K3L field, where there is one basic supervisor in charge of K3L in the unit. Including those in Cisokan, the implementation is directly from the K3L implementer. Moreover, for assistance in the process of making environmental documents, it is found in the environmental sub-bureau, including the manager was there.

v. Do you use your environmental policy of EMS from your previous projects before drafting EIA's document of your new project?
Not. We compose according to the certification in our unit because it could be irrelevant.

vi. When you are drafting EIA's document, do you consider that the document will be used for EMS?
N.A.

vii. Do you calculate the life cycle environmental impact in the EIA drafting process?
We prepare EIA based on applicable regulations and do not reach a life cycle analysis.

viii. Do you share the information from EIA's process with your EMS team? And do your EMS team give feedback in regard to that?
For ISO, there is their own team in the environmental sub-bureau which also includes EIA management. In our unit, we adhere to a combined management system. Not only the environment but all parties are also included in the team for their own ISO. However, for the environment, it is carried out by the environmental sub-bureau.

ix. During the process of making the AMDAL document, was there information sharing with the EMS team? And did the EMS team give your feedback on that?
It's possible to happen. Yesterday also during set up it was possible to share information. Because from the time of set up and implementation involved teams from other fields. However, the main responsibility remains with the environmental sub-bureau. For example, when preparing risks. So, it is possible to give feedback to each other.

c. Barriers
   i. What possible barriers do you think exist while implementing the integration of EIA and EMS/ISO 14001?
   The main obstacle is limited (human) resources. While it takes sufficient time. Deadlines are not synchronized between the time used for the integration process.

   ii. Is there any overlap in document creation?
   No, because so far, our unit has only been certified because we don't experience any saturation in making such documents.

Transcript of Interview

Interviewee : Karlina Wahyuningsih

Institution : PT PLN (Persero) – Java Central Region 1

Date : 1 July 2021

Business Sectors (PLN)

a. Business Perceptions
   i. Related to the environmental aspect, what kind of environmental report do you routinely make? (e.g., EIA, EMS, or others)
   *EIA has obligations that must be followed for companies that produce electricity and also inevitably produce waste. In the EIA, there is a matrix of environmental management and monitoring to fulfill the agreement that we have on the fulfillment of the permit. Be it an environmental permit, toxic and hazardous waste, or liquid waste. In addition, we also have to be up to date with existing regulations. The last one is Government Regulation 22 2021, also internal issues in our environment, related to community issues, etc. Then we to leave. We also identify the environmental impact aspect (ASDAM), which is also from the EIA. Because there is a pre-construction plan, from there emerge what impacts are produced, there we also identify aspects of the environmental impact of our electricity production. So, we put it in the form of a report if we RKL RPL (*Environmental Management Plan and Environmental Monitoring Plan) *because the scope is quite large (large). We report every semester. Manuals and electronics. We report the manual to the city and provincial environmental offices and the Legal Enforcer of the Ministry of Environment and Forestry. We report electronically through a simple report that is reported every month.*

   ii. I see that one of your mission is operating an environmentally friendly business. What do you think is the role of EIA in building this mission?
   The EIA is a guide. Our guide, because the matrix already states the management we must do, such as how to reduce emissions, how to replace the carbon dioxide we produce with planting or reforestation. There are plans related to the improvement of several equipment innovations to be able to reduce the impact that we produce like that. As recently, there were innovations in the engine. That's how we translate the EIA. The vision is together with the mission.

   iii. Do you still make a report regarding the monitoring and evaluation of EIA at present? How often do you do that (in a year)?
   Still, there are those per 6 months and monthly. Per month to reduce emissions, B3 waste, and also water.

   iv. Do you use the EIA document for other purposes?
   ISO is a system, and EIA goes to operations. If in ISO it is PDCA, if in EIA, how will we implement and monitor our activities? But related to the improvement is in ISO. So EIA is part of the ISO itself. In ISO, it contains policies, and those policies come from the existing EIA. So the EIA document is a document that is part of the ISO.

   v. I see that you have ISO 14001 certifications. Can you tell me about the reasons for being ISO14001 certified?

First, we want to check the extent of our obedience. Second, our commitment to emissions. Our mission is to be environmentally friendly. Third, let the system continue.

vi. Do you think there is any correlation between EIA and EMS/ISO 14001? In which sense?
In ISO, there is a clause on the implementation of operations. For the operation, we provide guidance from EIA. What are the implementation and monitoring like? After the results are available, they will be checked through an audit. After knowing what the shortcomings are and where new innovations and improvements are made. So EIA is the point of our obedience first. And its ISO continuity. ISO is always up to date on the law.

vii. Do you have a strong commitment to putting the environmental policy of EMS within EIA's processes?
One of them is included in our Corporate Long-Term Plan. It is used to enter the annual and five-year plans. Then our Key Performance Indicator goes straight to Proper, which must be GOLD. So want or not. So you have to be committed. If not, then we disobey. Are they sharing between units? The issue is different. Sharing if the issue and the generator are the same can only happen.

b. Potential
   i. How often do you make reports and evaluations base on ISO 14001 certification?
   There are no reports, and there are audits. Because ISO 14001 is not mandatory. We only make documents for compliance with audits and obligations for Proper. So in the Proper, there is an aspect of the Environmental Management System. So there, we input the required data in the EMS as requested by the Ministry of Environment and Forestry as well.

   ii. Do you consider the environmental impacts of the EIA to be put in the EMS/ISO 14001?
   In ISO Not specific, only related to reporting. Get all into the impact aspect. Including now, we measure about LCA (Life cycle analysis). LCA is a self-reporting only of the results of our management and monitoring.

   iii. When you are drafting the Environmental Policy for EMS, do you consider using EIA's document as a basis of the policy?
   Not only EIA, but we also use Life Cycle Analysis.

   iv. Do you assign your environmental management in the drafting process of EIA's document? If yes, how far is its role in the process?
   Led by GM, in charge of several managers, one of which is the operations and maintenance manager. Underneath, there is SPSK3L.

   v. Do you use your environmental policy of EMS from your previous projects before drafting EIA's document of your new project?
   Policies are usually from the results of the meeting. What needs to be done in terms of EIA, what needs to be processed, monitored. What needs improvement, and the latest issues related to EIA. EIA is made by hiring Environment Research Center – Udayana University. Lastly, in 2015, Because there was additional work in the project.

   vi. When you are drafting EIA's document, do you consider that the document will be used for EMS?

EIA is automatically included in the ISO. So not paying attention to the ISO is fine, too, because the ISO will capture the EIA later if the addendum can be adjusted to the existing conditions. Why is it extended? And it doesn't change the ISO. ISO is the parent, and AMDAL is part of ISO. ISO does not affect EIA.

vii. Do you calculate the life cycle environmental impact in the EIA drafting process? (Answered in b.i)

viii. In the PT PLN Project, are the EIA team and the SML team the same team, or are they different teams?
EIA in the K3L (occupational, health, safety, and environment) section, while ISO in the integrated management system (SMT) section, has its own field. SMT also oversees several systems, including 9001, 45001, etc. And they are the parent.

ix. Do you share the information from EIA's process with your EMS team? And do your EMS team give feedback in regard to that?
Yes, obviously, there is. Especially regarding procedures and IKA. Parent to SMT and those who control the document.

c. Barriers
   i. What possible barriers do you think exist while implementing the integration of EIA and EMS/ISO 14001?
   Constraints are not so. Because we maintained the consistency of what must be met. For example, at the beginning of the year, we already knew what to do because of the change in policy, ASDAM. Suppose the EIA will not change the matrix. Maintaining that consistency is what must continue.
   ii. When making environmental reports, does PLN feel that it is making the same report for two different functions?
   Duplication does not exist. Because what we do in EIA is what we take for evidence at ISO. So no doubles. Because there is no ISO format either, so from ISO only the fulfillment of which clause is so, indeed there is a format, and there is also an EMS format. If it is amended, there will be no changes to the rules. This means that the same document can be used for other documents. Yes, because the evidence in the AMDAL is picked up for ISO. So there is no double2. Because there is no ISO format either. So from ISO, only the fulfillment of which clause is so, indeed there is a format, and there is also an EMS format. If it is amended, there will be no changes to the rules.

Transcript of Interview

Interviewee : Diding Achirudin

Institution : PT. Sarbi Moerhani Lestari

Date : 23 June 2021

Consultant of EIA

Potentials

i. What do you think if the ISO 14001 and EIA can be integrated? How?
ISO for us (consultants) as a regulation to review documents. This application is an initiative of the company. This is to follow the trend of companies getting better in environmental management. The implementation of quality management in our company is synergized with ISO 14001 and OHSAS from the ministry of manpower. So in preparing the AMDAL document, we follow the ISO 9001 and ISO 14001 standards. In addition, the Occupational Health and Safety Management System.

ii. When you are assisting the drafting process of the EIA, do you prepare the document to be used as a basis of environmental policy for EMS?
We in the company use ISO 9001 and 14001 references. Starting from the planning, organizing, process, and development stages, including document review, referring to ISO. So all this time, we have been guiding the quality from ISO. To ensure that the EIA consulting service provider company can implement ISO, it must obtain certification from a certification body. Once a year, there will be a survivor. Then the implementation of ISO is more focused on implementation and implementation. Good in the preparation of AMDAL,

iii. When you draft EIA's document, do you consider that the document will be used for EMS?
As a consultant who already has ISO 9001 and ISO 14001, we indirectly prepare AMDAL documents in accordance with ISO 9001 and 14001 standards.

iv. Do you receive a strong request from the project owner to put EMS in the EIA's process?

So far, there has been no request from the Proponent asking that the AMDAL document be prepared in accordance with ISO 9001 and ISO 14001 or 45001. What is important for them is the finished document. However, at the initial stage of the tender, they usually require that participants have SMK3, ISO 9001, 14001. For documents, they believe that the EIA document can be accounted for. So like it or not, as a consulting service, we are trying to implement ISO 9001- and 14001, and then SMK3LL (Occupational Health Safety Management System and Environmental Protection.

v. Do you calculate the life cycle environmental impacts in the EIA drafting process?
N.A.

Barriers

i. What possible barriers do you think exist while implementing the integration of EIA and EMS/ISO 14001?
Not yet implemented 100%. Possibly because of busyness or certain work, making reports is rather difficult.

Transcript of Interview

Interviewee : Jonis Ginting

Institution : PT Global Inter Sistem

Date : 19 June 2021

Consultant of EIA

a. General
   i. In one year, how many clients do you take care of AMDAL?
   In one year, on average, there are 3-5 clients.

   ii. Dari bidang/sektor apakah klien Anda tersebut?
   Multi-sector, agriculture, transportation, public works. Including EMR. Including power plants. The last power plant we worked on was in Batang Toru (PLTA). The client here is private. This is related to a presidential regulation that causes the current power plant to be transferred to the private sector, and PLN will only buy current.

   iii. Are any of your clients from the Power Generation sector?
   Yes, we have.

b. Potentials
   i. What do you think if the ISO 14001 and EIA can be integrated? How?
   I am quite confused by the concept of integration in question.

   ii. When you are assisting the drafting process of the EIA, do you prepare the document to be used as a basis of environmental policy for EMS?
   During the preparation of the EIA, we only focused on the planned activities to be carried out. So, it has not focused on being the basis for becoming an SML business actor or company. The average client is a newly formed company. So, they haven't been around to think that far. So, their focus is only on obtaining requirements for operational permits. For example, take the power plant as an example, so indeed he has a large group. Because for operations, it formed a small group again. So that automatically all new licenses. All of their operations are new, including their human resources who did not have time to think ahead to be used as samples. If we look in the mirror at PLN, there is a segment for them. Because they have been around for a long time, they just point to the unit.

   iii. When you draft EIA's document, do you consider that the document will be used for EMS?
   We have worked with PLN for the transmission network. So they said that before the discussion at the Environmental Service, we would expose it at PLN. So they present the SOP and policies that apply in the company. But for new companies, there is no exception, except for those that have been around for a long time. Surely they convey, but not pressuring them that it is not part of the EMS, no. They only said that they conveyed the SOP or policy at PLN.

   iv. If there are two clients, one submits the AMDAL document to be used for the SML, and the other does not submit it. How are the two clients handled?

The treatment is the same. Everything depends on the request of the initiator or business actor. If indeed the discussion is more and indeed if the policies must be included in the EIA, then there is no problem. For us, we accept but from us do no special treatment.

v. Have you ever received a strong request from the project owner to include EMS in the AMDAL process?
Yes, and it depends on the request of the project owner. For companies that are still new they have not yet thought about their environmental management and OHS management. Perhaps most companies are more into quality management. Anyway, they already have an EIA, UKL-UPL, or whatever the environmental documents are; it's enough for them. Thankfully if there is no case, they are busy if there are cases that get findings from NGOs—for example, related to the study of biodiversity, wastewater.

vi. Do you calculate the life cycle environmental impacts in the EIA drafting process?
Yes, in the EIA, the impact linkage is in the evaluation chapter in a holistic manner so that the impact is primary, secondary, and tertiary. Everything is studied in the EIA. Including estimating the impact. We will also take into account what inputs or materials will be used. This impact is not arbitrary, nor can we predict the impact of the waste. Of course, B3 waste has parameters, including those that enter the water, there are parameters. Later we will also conduct a holistic evaluation as a whole. What is the main cause of the impact, its derivatives, and so on to the tertiary impact. In fact, if the EIA is implemented properly, it will actually be covered in a holistic manner. That's why there is literature like what you said that the EIA is used as the basis for the preparation of environmental management.

vii. How many of your clients submit documents will also be the basis for the preparation of the Amdal.
PLN only

c. Barriers
   i. What possible barriers do you think exist while implementing the integration of EIA and EMS/ISO 14001?
   The obstacle comes from the company itself, as I said earlier. In the preparation of the EIA, they only focus on fulfilling the requirements for obtaining a permit. For example, in the EIA, there is a report on the implementation of the RKL RPL. When they are operational, they are obliged to do a semester report. Sometimes they do not do the reporting. So, what is the form of environmental management? Then, their commitment is really needed. Even though the EIA already listed forms of mitigation, management plans are to be carried out. We can list everything. But back again related to their commitment. There must be regulation because this Amdal goes back and forth, up and down. There is a discourse deleted.

Transcript of Interview

Interviewee : Karlina Bone

Institution : TUV Nord Indonesia

Date : 25 June 2021

Consultant of EMS

a. Potential
   i. How many clients do you have so far? And from what sectors? Is there any from the power plant sector?
   The number of companies that have been certified in TUV Nord, 800-900 companies. The most sector of the companies is from Manufacturing, contractor, steel manufacture, plastic base manufacture. There are but not many. It is included with PLN.

   ii. What do you think if the ISO 14001 and EIA can be integrated? How?
   It must be from the government. It's not ISO that integrates with AMDAL because ISO is an international standard. In addition, the target is not only big companies but also small companies. ISO is made open to be followed internationally. ISO 14001 and AMDAL can be integrated with fulfilling legal aspects. Every company that wants to get ISO must follow the existing laws and regulations, including AMDAL and UKL RPL. So it can be said that AMDAL and ISO intersect. A new policy from the government where new companies can obtain an activity permit even though the AMDAL has not yet been issued. For companies that do not follow the legal aspects will affect the ISO 14001 auditor's assessment with the meaning that there is a discrepancy. The form of the findings can be major or minor findings—Decision-making system by non-auditor decision-makers. The auditor's output is to recommend. The final decision is in the decision-maker.

   iii. When you assisted in the EMS/ISO 14001 certification process, did you use the AMDAL as one of the bases for its preparation?
   1. If yes, to what extent?
   Certainly, the auditor will ask what environmental aspects and impacts are. If you don't have this, you can't get certified. The EIA is at point 6.1.2 of the ISO Standard, where ISO asks to define the environmental aspects of activities. These aspects by companies are usually taken from the AMDAL. After that, the auditor will also ask about the monitoring, measurement, analysis, and evaluation. At ISO, not only look at the environmental aspects, but also the components that support these environmental aspects. Like the HRD function in the company. The HRD function will be related to the company's recruitment system, human resource capacity building, etc.
   The auditor will also check the EIA document to monitor whether a company really meets the existing environmental aspects.

   iv. When you assist the drafting process of the Environmental Policy for EMS, do you suggest your client use EIA's document as a basis of the policy?
   Indirectly.

b. Barriers

i. What possible barriers do you think exist while implementing the integration of EIA and EMS/ISO 14001?

There should be no problems. The challenge is that ISO is voluntary. So from the auditor's perspective, there is no significant problem because the auditors only follow the standards of ISO. The most constraint in terms of the company/implementer. The problem lies in how the company fulfills the requirements/permits set out in the applicable regulations.

ii. Are you creating repetitive documents?

- Loss in the certification process for a company usually occurs when consultants or 3rd parties make company procedures. These makes it possible for procedures that are not in accordance with the company's business processes. So that when the auditor checks, the company will have difficulty.

Appendix 4. Consent Forms

PERSETUJUAN UNTUK BERPARTISIPASI DALAM WAWANCARA PENELITIAN

Sinkronisasi dan Sinergi Pelaksanaan Analisis Mengenai Dampak Lingkungan dan Sistem Manajemen Lingkungan Pada Sektor Pembangkit Listrik di Indonesia

	Ya	Tidak
- Saya, Ajrun Karim, setuju secara sukarela untuk berpartispasi dalam penelitian.	☑	☐
- Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat menarik diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun.	☑	☐
- Saya menerima bahwa saya memiliki hak untuk menolak/mengizinkan data dari wawancara saya digunakan, dan setelah digunakan konten akan dihapus.	☑	☐
- Saya telah dijelaskan tujuan dan sifat studi tersebut kepada saya dan saya memiliki kesempatan untuk mengajukan pertanyaan tentang studi tersebut.	☑	☐
- Saya setuju wawancara saya direkam dengan audio-video.	☑	☐
- Saya memahami bahwa semua informasi yang saya berikan untuk penelitian ini akan dirahasiakan.	☑	☐
- Saya memahami bahwa dalam laporan apa pun tentang hasil penelitian ini, identitas saya akan tetap anonim jika diinginkan. Ini akan dilakukan dengan tidak secara eksplisit menyebutkan nama saya dan menyembunyikan detail wawancara saya yang dapat mengungkapkan identitas saya atau identitas orang yang saya bicarakan.	☑	☐
- Saya memahami bahwa saya berhak mengakses informasi yang saya berikan setelah wawancara.	☑	☐
- Saya memahami bahwa saya bebas untuk menghubungi siapa pun yang terlibat dalam penelitian untuk mendapatkan klarifikasi dan informasi lebih lanjut.	☑	☐

Nama-nama orang yang terlibat dalam penelitian ini yang menjamin penggunaan persetujuan yang disepakati dan jawaban yang diberikan selama wawancara disebutkan di bawah ini.

Peneliti:

Adib Hasan

Pembimbing Penelitian:
1. Dr. Laura Franco Garcia
2. Dr. V.I. Daskalova
3. Prof. Dr. Erri N. Megantara

Partisipan:

Ajrun Karim

Tanggal: 03 Juni 2021

CONSENT TO TAKE PART IN RESEARCH STUDY INTERVIEW

The Integrated implementation of Environmental Impact Assessment and Environmental Management System on the Power Plant Sectors in Indonesia

		Yes	No
-	I, Tito Erlangga Deca D. voluntary agree to participate in this research study interview.	√	☐
-	I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.	√	☐
-	I understand that I can withdraw permission to use data from my interview after it, in which case material will be deleted.	√	☐
-	I have had the purpose and nature of the study explained to me and I have had the opportunity to ask questions about the study.	√	☐
-	I agree to my interview being audio-video-recorded.	√	☐
-	I understand that all information I provide for this study will be treated confidentially.	√	☐
-	I understand that in any report on the result of this research my identity will remain anonymous if preferred to be so. This will be done by not explicitly mentioning my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.	√	☐
-	I understand that I am entitled to access the information I have provided after the interview.	√	☐
-	I understand that I am free to contact any of the people involved in the research to seek further clarification and information.	√	☐

Here as follow the names of the people involved in this research who guarantee the agreed use of this consent and the answer provided during the interview.

Researchers:
1. Adib Hasan

Project Supervisor:
1. Dr. Laura Franco-Garcia
2. Dr. Victoria Deskalova LLM
3. Prof. Dr. Erri N. Megantara

Participant:

Tito Erlangga Deca D
Date:

PERSETUJUAN UNTUK BERPARTISIPASI DALAM WAWANCARA PENELITIAN

Sinkronisasi dan Sinergi Pelaksanaan Analisis Mengenai Dampak Lingkungan dan Sistem Manajemen Lingkungan Pada Sektor Pembangkit Listrik di Indonesia

	Ya	Tidak
- Saya, **Didi Adji Siddik**, setuju secara sukarela untuk berpartispasi dalam penelitian.	√	☐
- Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat menarik diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun.	√	☐
- Saya menerima bahwa saya memiliki hak untuk menolak/mengizinkan data dari wawancara saya digunakan, dan setelah digunakan konten akan dihapus.	√	☐
- Saya telah dijelaskan tujuan dan sifat studi tersebut kepada saya dan saya memiliki kesempatan untuk mengajukan pertanyaan tentang studi tersebut.	√	☐
- Saya setuju wawancara saya direkam dengan audio-video.	√	☐
- Saya memahami bahwa semua informasi yang saya berikan untuk penelitian ini akan dirahasiakan.	√	☐
- Saya memahami bahwa dalam laporan apa pun tentang hasil penelitian ini, identitas saya akan tetap anonim jika diinginkan. Ini akan dilakukan dengan tidak secara eksplisit menyebutkan nama saya dan menyembunyikan detail wawancara saya yang dapat mengungkapkan identitas saya atau identitas orang yang saya bicarakan.	√	☐
- Saya memahami bahwa saya berhak mengakses informasi yang saya berikan setelah wawancara.	√	☐
- Saya memahami bahwa saya bebas untuk menghubungi siapa pun yang terlibat dalam penelitian untuk mendapatkan klarifikasi dan informasi lebih lanjut.	√	☐

Nama-nama orang yang terlibat dalam penelitian ini yang menjamin penggunaan persetujuan yang disepakati dan jawaban yang diberikan selama wawancara disebutkan di bawah ini.

Peneliti:

Adib Hasan

Pembimbing Penelitian:
1. Dr. Laura Franco Garcia
2. Dr. V.I. Daskalova
3. Prof. Dr. Erri N. Megantara

Partisipan:

Tandatangan partisipan

Tanggal: 28 Juni 2021

CONSENT TO TAKE PART IN RESEARCH STUDY INTERVIEW

The Integrated implementation of Environmental Impact Assessment and Environmental Management System on the Power Plant Sectors in Indonesia

		Yes	No
-	I, Karlina voluntary agree to participate in this research study interview.	√	☐
-	I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.	√	☐
-	I understand that I can withdraw permission to use data from my interview after it, in which case material will be deleted.	√	☐
-	I have had the purpose and nature of the study explained to me and I have had the opportunity to ask questions about the study.	√	☐
-	I agree to my interview being audio-video-recorded.	√	☐
-	I understand that all information I provide for this study will be treated confidentially.	√	☐
-	I understand that in any report on the result of this research my identity will remain anonymous if preferred to be so. This will be done by not explicitly mentioning my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.	√	☐
-	I understand that I am entitled to access the information I have provided after the interview.	√	☐
-	I understand that I am free to contact any of the people involved in the research to seek further clarification and information.	√	☐

Here as follow the names of the people involved in this research who guarantee the agreed use of this consent and the answer provided during the interview.

Researchers:
1. Adib Hasan

Project Supervisor:
1. Dr. Laura Franco-Garcia
2. Dr. V.I. Daskalova, LLM
3. Prof. Dr. Erri N. Megantara

Participant:

Signature of participant

Date: June 25, 2021

PERSETUJUAN UNTUK BERPARTISIPASI DALAM WAWANCARA PENELITIAN

Sinkronisasi dan Sinergi Pelaksanaan Analisis Mengenai Dampak Lingkungan dan Sistem Manajemen Lingkungan Pada Sektor Pembangkit Listrik di Indonesia

	Ya	Tidak
- Saya Ayub Ashari (Perwakilan PT. GIS), setuju secara sukarela untuk berpartispasi dalam penelitian.	√	☐
- Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat menarik diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun.	√	☐
- Saya menerima bahwa saya memiliki hak untuk menolak/mengizinkan data dari wawancara saya digunakan, dan setelah digunakan konten akan dihapus.	√	☐
- Saya telah dijelaskan tujuan dan sifat studi tersebut kepada saya dan saya memiliki kesempatan untuk mengajukan pertanyaan tentang studi tersebut.	√	☐
- Saya setuju wawancara saya direkam dengan audio-video.	√	☐
- Saya memahami bahwa semua informasi yang saya berikan untuk penelitian ini akan dirahasiakan.	√	☐
- Saya memahami bahwa dalam laporan apa pun tentang hasil penelitian ini, identitas saya akan tetap anonim jika diinginkan. Ini akan dilakukan dengan tidak secara eksplisit menyebutkan nama saya dan menyembunyikan detail wawancara saya yang dapat mengungkapkan identitas saya atau identitas orang yang saya bicarakan.	√	☐
- Saya memahami bahwa saya berhak mengakses informasi yang saya berikan setelah wawancara.	√	☐
- Saya memahami bahwa saya bebas untuk menghubungi siapa pun yang terlibat dalam penelitian untuk mendapatkan klarifikasi dan informasi lebih lanjut.	√	☐

Nama-nama orang yang terlibat dalam penelitian ini yang menjamin penggunaan persetujuan yang disepakati dan jawaban yang diberikan selama wawancara disebutkan di bawah ini.

Peneliti:

Adib Hasan

Pembimbing Penelitian:
1. Dr. Laura Franco Garcia
2. Dr. V.I. Daskalova
3. Prof. Dr. Erri N. Megantara

Partisipan:

Ayub Ashari
Tanggal: 18 Juni 2021

PERSETUJUAN UNTUK BERPARTISIPASI DALAM WAWANCARA PENELITIAN

Sinkronisasi dan Sinergi Pelaksanaan Analisis Mengenai Dampak Lingkungan dan Sistem Manajemen Lingkungan Pada Sektor Pembangkit Listrik di Indonesia

		Ya	Tidak
-	Saya, Diding Achirudin, setuju secara sukarela untuk berpartispasi dalam penelitian.	√	☐
-	Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat menarik diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun.	√	☐
-	Saya menerima bahwa saya memiliki hak untuk menolak/mengizinkan data dari wawancara saya digunakan, dan setelah digunakan konten akan dihapus.	√	☐
-	Saya telah dijelaskan tujuan dan sifat studi tersebut kepada saya dan saya memiliki kesempatan untuk mengajukan pertanyaan tentang studi tersebut.	√	☐
-	Saya setuju wawancara saya direkam dengan audio-video.	√	☐
-	Saya memahami bahwa semua informasi yang saya berikan untuk penelitian ini akan dirahasiakan.	√	☐
-	Saya memahami bahwa dalam laporan apa pun tentang hasil penelitian ini, identitas saya akan tetap anonim jika diinginkan. Ini akan dilakukan dengan tidak secara eksplisit menyebutkan nama saya dan menyembunyikan detail wawancara saya yang dapat mengungkapkan identitas saya atau identitas orang yang saya bicarakan.	√	☐
-	Saya memahami bahwa saya berhak mengakses informasi yang saya berikan setelah wawancara.	√	☐
-	Saya memahami bahwa saya bebas untuk menghubungi siapa pun yang terlibat dalam penelitian untuk mendapatkan klarifikasi dan informasi lebih lanjut.	√	☐

Nama-nama orang yang terlibat dalam penelitian ini yang menjamin penggunaan persetujuan yang disepakati dan jawaban yang diberikan selama wawancara disebutkan di bawah ini.

Peneliti:

Adib Hasan

Pembimbing Penelitian:
1. Dr. Laura Franco Garcia
2. Dr. V.I. Daskalova
3. Prof. Dr. Erri N. Megantara

Partisipan:

Tandatangan partisipan

Tanggal: 19 Juni 2021

PERSETUJUAN UNTUK BERPARTISIPASI DALAM WAWANCARA PENELITIAN

Sinkronisasi dan Sinergi Pelaksanaan Analisis Mengenai Dampak Lingkungan dan Sistem Manajemen Lingkungan Pada Sektor Pembangkit Listrik di Indonesia

	Ya	Tidak
- Saya Karlina Wahyuningsih, setuju secara sukarela untuk berpartispasi dalam penelitian.	☑	☐
- Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat menarik diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun.	☑	☐
- Saya menerima bahwa saya memiliki hak untuk menolak/mengizinkan data dari wawancara saya digunakan, dan setelah digunakan konten akan dihapus.	☑	☐
- Saya telah dijelaskan tujuan dan sifat studi tersebut kepada saya dan saya memiliki kesempatan untuk mengajukan pertanyaan tentang studi tersebut.	☑	☐
- Saya setuju wawancara saya direkam dengan audio-video.	☑	☐
- Saya memahami bahwa semua informasi yang saya berikan untuk penelitian ini akan dirahasiakan.	☑	☐
- Saya memahami bahwa dalam laporan apa pun tentang hasil penelitian ini, identitas saya akan tetap anonim jika diinginkan. Ini akan dilakukan dengan tidak secara eksplisit menyebutkan nama saya dan menyembunyikan detail wawancara saya yang dapat mengungkapkan identitas saya atau identitas orang yang saya bicarakan.	☑	☐
- Saya memahami bahwa saya berhak mengakses informasi yang saya berikan setelah wawancara.	☑	☐
- Saya memahami bahwa saya bebas untuk menghubungi siapa pun yang terlibat dalam penelitian untuk mendapatkan klarifikasi dan informasi lebih lanjut.	☑	☐

Nama-nama orang yang terlibat dalam penelitian ini yang menjamin penggunaan persetujuan yang disepakati dan jawaban yang diberikan selama wawancara disebutkan di bawah ini.

Peneliti:

Adib Hasan

Pembimbing Penelitian:
1. Dr. Laura Franco Garcia
2. Dr. V.I. Daskalova
3. Prof. Dr. Erri N. Megantara

Partisipan:

Karlina Wahyuningsih

Tanggal: 30 Juni 2021